HST-39A

AEP Model
E Model

Photo: AEP model

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STEREO CASSETTE-RECEIVER

SPECIFICATIONS

GENERAL

System: Superheterodyne FM/AM tuner, Complementary symmetry power amplifier circuit (SEPP OCL)

Power Requirements: 220 V ac, 50 Hz (AEP model)
110–120 or 220–240 V ac adjustable, 50/60 Hz (E model)

Power Consumption: 85W

Dimensions: Approx. 456 (w) x 225 (h) x 247 (d) mm
18 (w) x 8 7/8 (h) x 9 3/4 (d) inches
including projecting parts and controls

Weight: Approx. 6.6 kg, 14 lb 6 oz (net)
7.9 kg, 17 lb 2 oz (in shipping carton)

FM SECTION

Tuning Range: 87.5–108 MHz

Antenna: 300 Ω balanced
75 Ω unbalanced

Usable Sensitivity: 12 dBf, 2.2 μV, S/N = 30 dB

Harmonic Distortion: 0.5% (MONO), 1.0% (STEREO) at 400 Hz

Selectivity: 50 dB

S/N Ratio: 65 dB

Frequency Response: 70 Hz – 12.5 kHz ± 3 dB

Separation: Better than 35 dB

Tape Transport Mechanism Type	TCM-11VS25	
	Specifications	Test Equipment
Forward Torque	25 – 60 g·cm (0.35 – 0.84 oz·inch)	Sony torque meter CQ-101A, 102A, 103A
Fast Forward Torque	60 – 110 g·cm (0.84 – 1.53 oz·inch)	Sony torque meter CQ-201A
Rewind Torque	60 – 110 g·inch) (0.84 – 1.53 oz·inch)	Sony torque meter CQ-201A
Pinch Roller Pressure	310 – 400 g (11 – 14.1 oz)	spring scale or tension gauge

– Continued on page 2 –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®
SERVICE MANUAL

HST-39A

AM SECTION

AEP model

Band	SW	MW	LW
Tuning Range	5.8–15.8 MHz (49 - 19 m)	530–1, 605 kHz	150–350 kHz
Antenna	External antenna terminal	Built-in ferrite-rod antenna and external antenna terminal	
Sensitivity	30 μV, external antenna (S/N = 20 dB)	50 dB/m, built-in antenna 100 μV, external antenna (S/N = 20 dB)	52 dB/m, built-in antenna 150 μV, external antenna
S/N Ratio	50 dB		
Harmonic Distortion	0.8 % at 400 Hz		
Intermediate Frequency	468 kHz		

E model

Band	SW1	SW2	MW
Tuning Range	2.3–6.2 MHz (120–49 m)	7–17.9 MHz (41–16 m)	530–1,605 kHz
Antenna	External antenna terminal		Built-in ferrite-rod antenna and external antenna terminal
Sensitivity	30 μV, external antenna (S/N = 20 dB)		50 dB/m, built-in antenna 100 μV, external antenna
S/N Ratio	50 dB		
Harmonic Distortion	0.8 % at 400 Hz		
Intermediate Frequency	468 kHz		

AMPLIFIER SECTION

Continuous RMS Power Output: (less than 5% THD, both channels driven simultaneously) 17 + 17 W (8 Ω) at 90 Hz –15 kHz

Music Power: 50 W (8 Ω)

Peak Music Power Inputs: 100 W

Inputs:

	sensitivity	impedance	S/N
PHONO (phono jacks)	3.5 mV	47 kΩ	65 dB
AUX (phono jacks)	350 mV	47 kΩ	70 dB
MIC (phono jacks)	1 mV	600 Ω	60 dB

Outputs:

REC OUT (phono jacks)	output voltage 250 mV	impedance 10 kΩ
HEADPHONES	Accepts headphones of 8 Ω or more	
SPEAKERS	Accepts speakers of 8 Ω	

Frequency Response: PHONO: RIAA curve ±2 dB
AUX: 30 Hz – 30 kHz ±3 dB

Tone Controls: BASS: ±10 dB at 100 Hz
TREBLE: ±10 dB at 10 kHz

Loudness Control (att. 30 dB): +6 dB at 100 Hz
+3 dB at 10 kHz

CASSETTE RECORDER SECTION

Recording System: 4-track 2-channel stereo

Frequency Response: DOLBY NR OFF
With Type III cassette (Sony FeCr)
40 – 15,000 Hz
With Type II cassette (Sony CD-α)
40 – 15,000 Hz
With Type I cassette (Sony BHF)
50 – 12,500 Hz

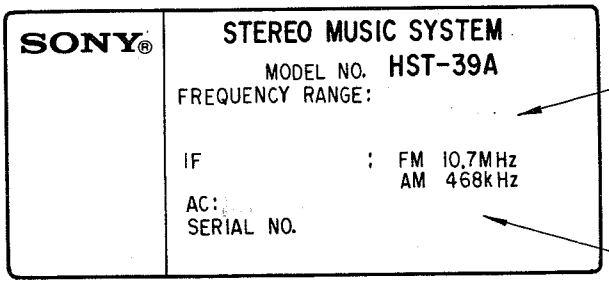
S/N Ratio: DOLBY NR OFF
With Type III cassette (Sony FeCr)
50 dB at peak level
DOLBY NR ON
Improved by 5 dB at 1 kHz
10 dB above 5 kHz

Wow and Flutter: 0.18 % WRMS

0 dB = 0.775 V

MODEL IDENTIFICATION

– Rear Board –



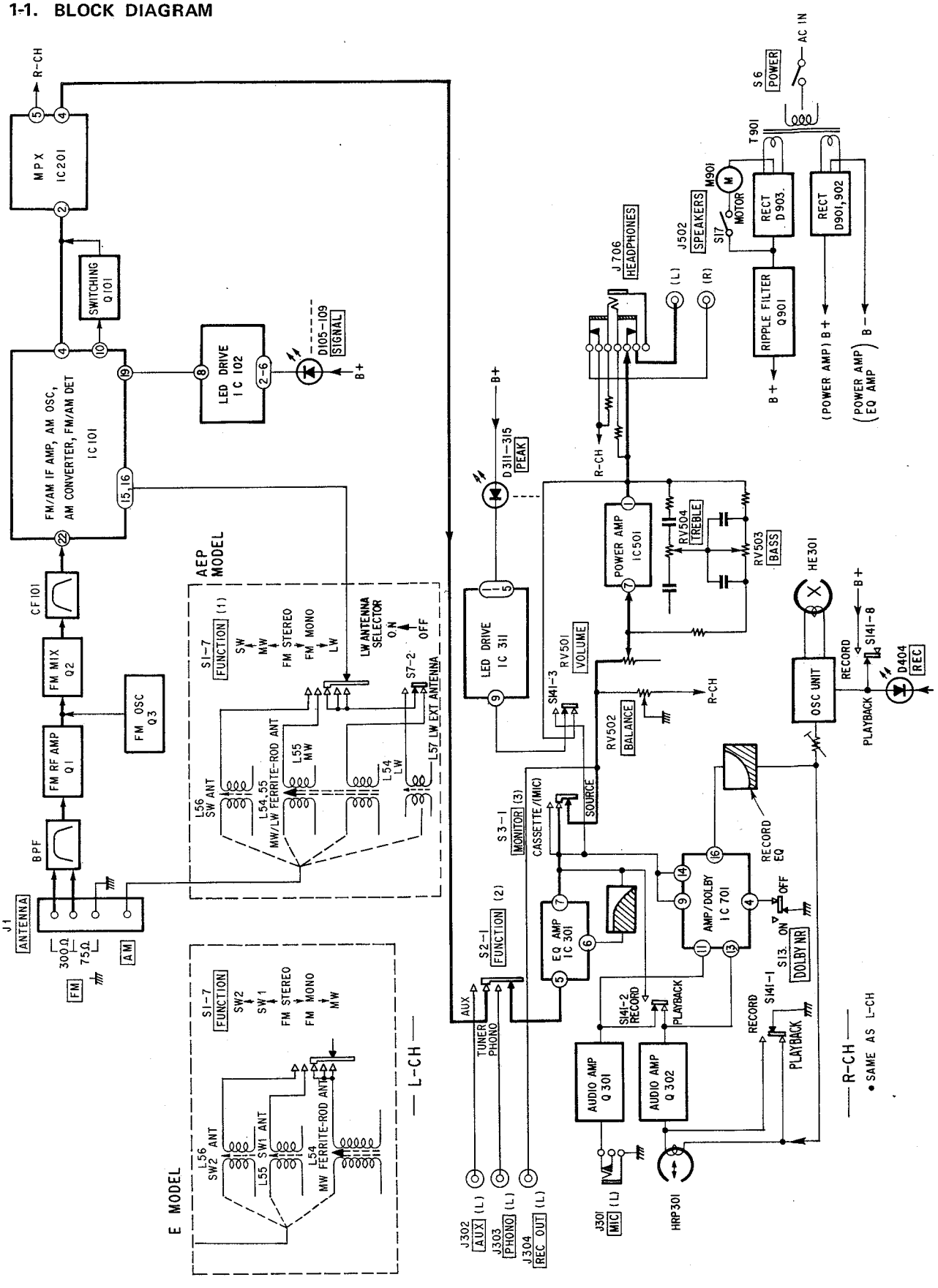
FREQUENCY RANGE

AEP model	E model
FM 87.5 – 108 MHz	FM 87.5 – 108 MHz
MW 530 – 1605 kHz	MW 530 – 1605 kHz
LW 150 – 350 kHz	SW1 2.3 – 6.2 MHz
SW 5.8 – 15.8 MHz	SW2 7.0 – 17.9 MHz

AEP model	E model
220 V ~ 50 Hz 85 W	110 – 120 V/220 – 240 V 50/60 Hz 85 W

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



SECTION 2
DISASSEMBLY

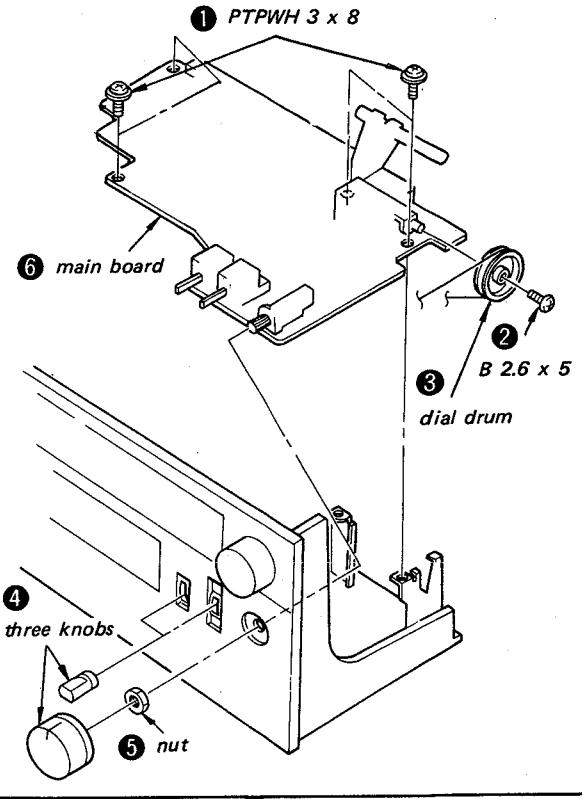
- Follow the disassembly procedure in the numerical order given.

Remove the case.
BTP 4 x 25 (four screws)

Remove the rear board.
PTPWH 3 x 8 (one screw)

DIAL CORD STRINGING
See page 6.

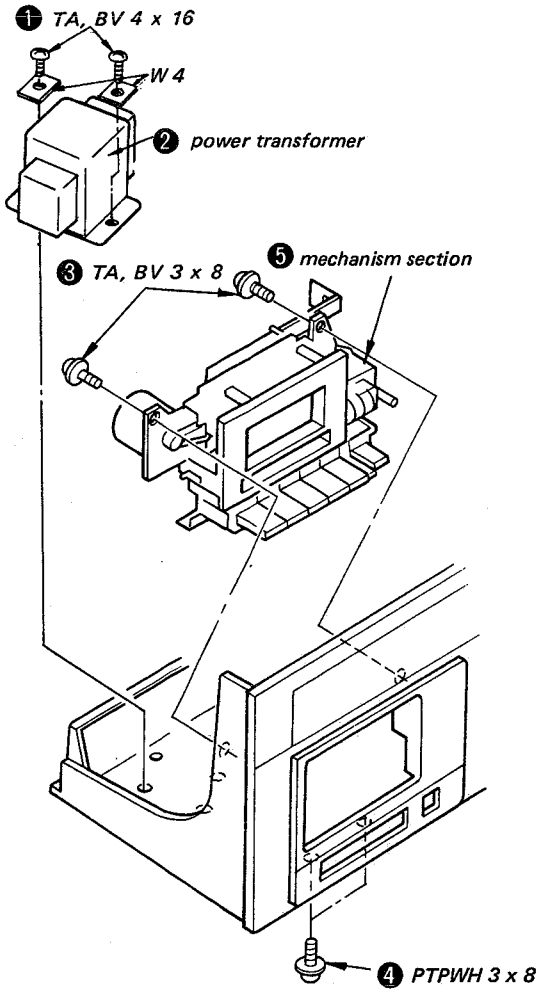
MAIN BOARD REMOVAL



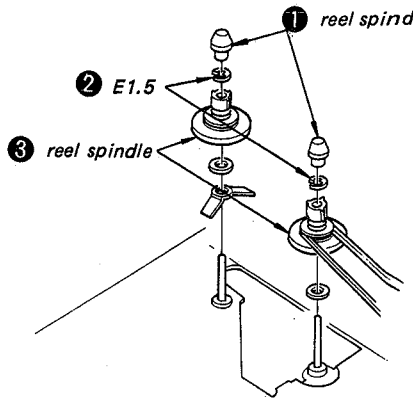
Remove the power amp board.
PTPW 3 x 8 (two screws) and nut

Remove the cassette deck cover.
TA, P 2.6 x 10 (two screws)

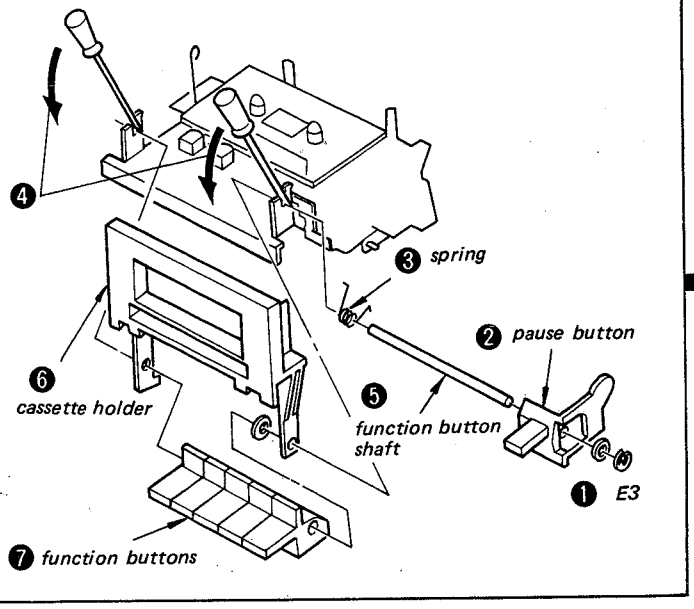
MECHANISM SECTION REMOVAL



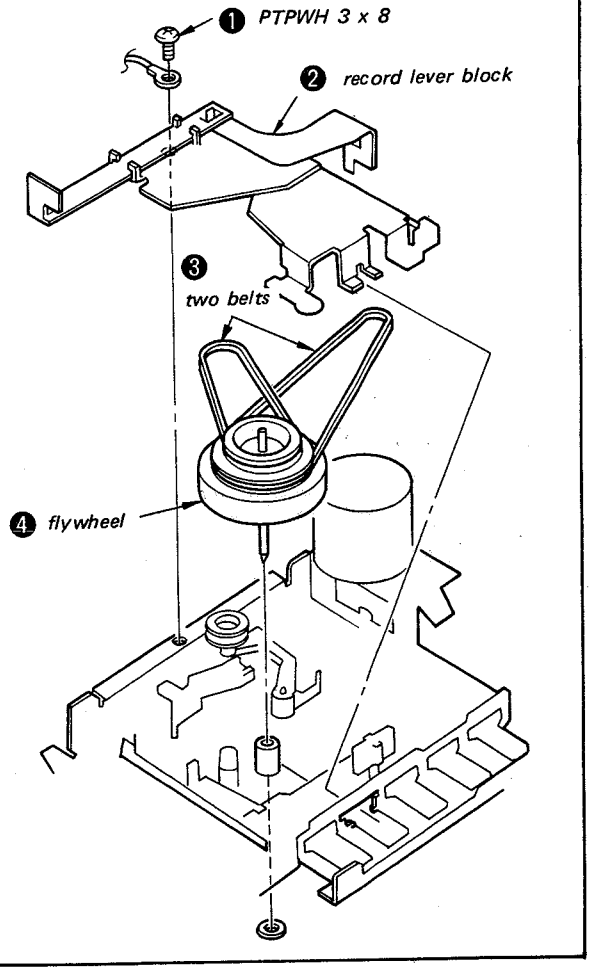
REEL SPINDLE REMOVAL



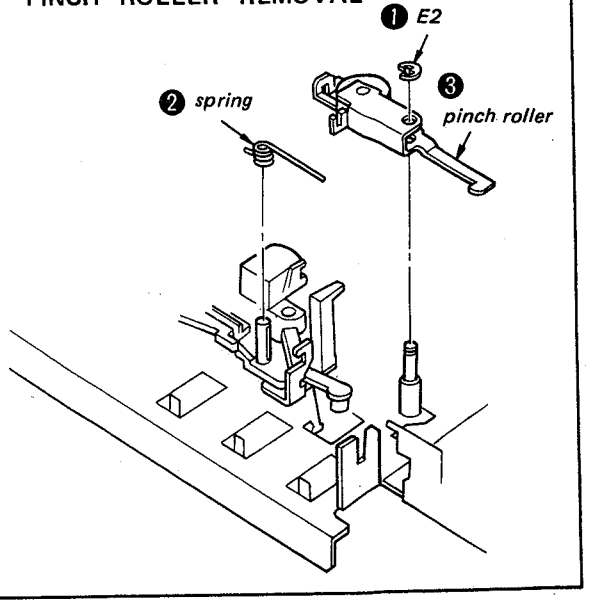
CASSETTE HOLDER REMOVAL



FLYWHEEL REMOVAL

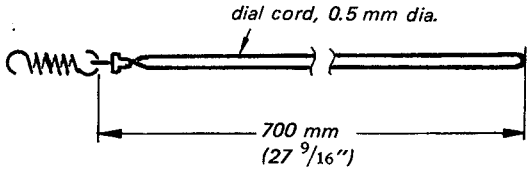


PINCH ROLLER REMOVAL



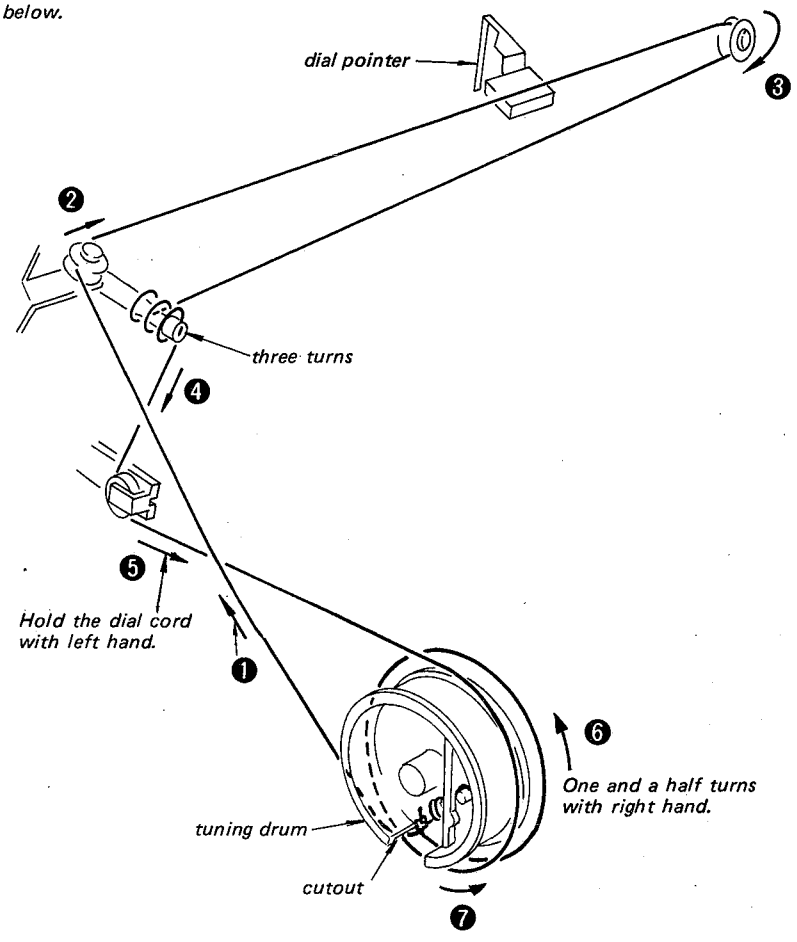
DIAL CORD STRINGING

1. Preparation



2. Stringing

- *Turn the tuning-capacitor shaft fully clockwise and set the tuning drum so that the cutout is positioned as shown below.*



3. Dial Pointer Setting

Receive a broadcasting station and set the dial pointer to the frequency of the station on the dial scale.

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

PRECAUTION

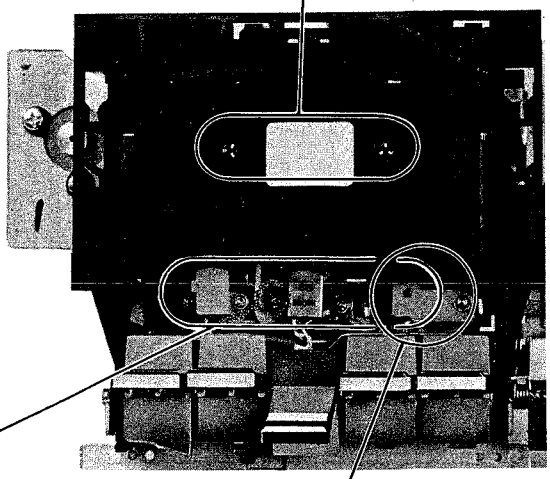
1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

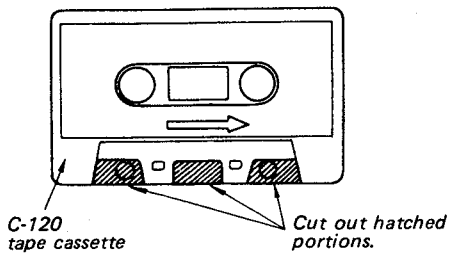
	Torque meter	Meter reading
Forward	CQ-101A, 102A, 103A	25 – 60 g·cm (0.35 – 0.84 oz·inch)
Fast Forward Rewind	CQ-201A	60 – 110 g·cm (0.84 – 1.53 oz·inch)



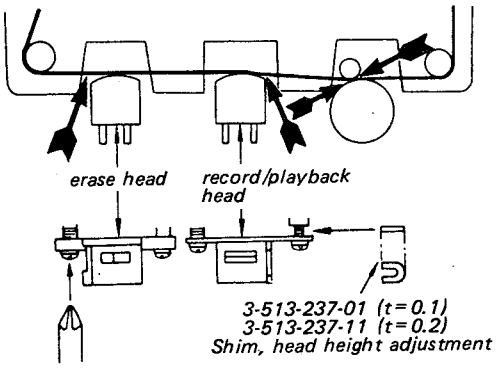
Head Height Adjustment

– Playback Mode –

1. Prepare an adjustment cassette as shown below.



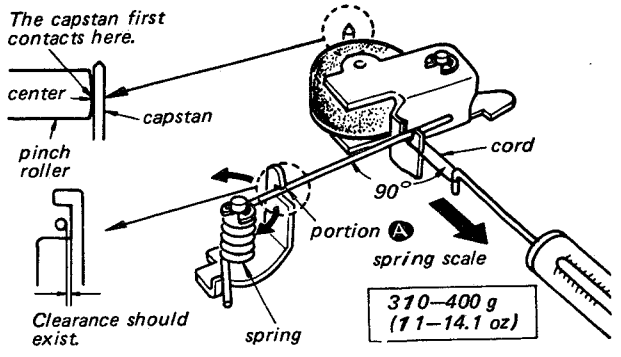
2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.



Pinch Roller Pressure Adjustment

– Playback Mode –

1. Pull the spring scale.
2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts to rotate.
3. If necessary, bend the portion Ⓐ .

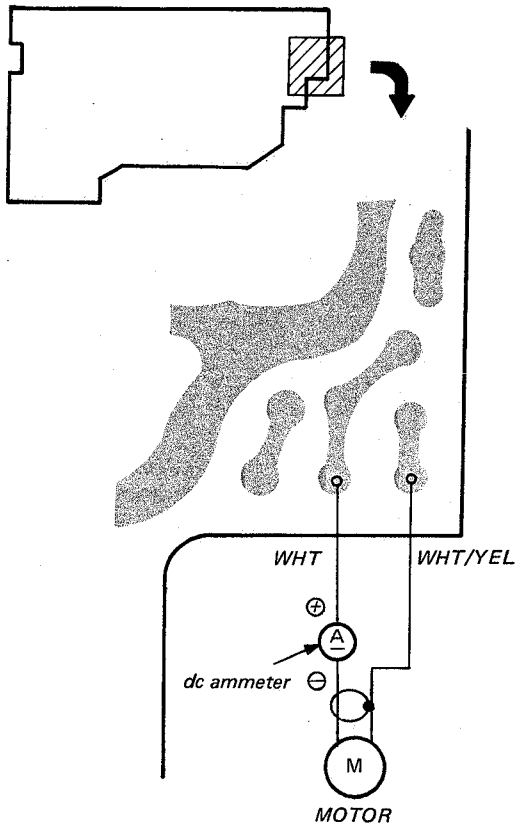


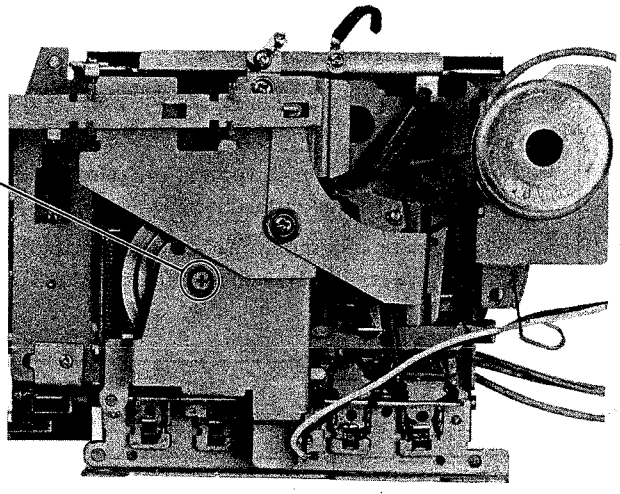
Note: If necessary, replace the spring.

Flywheel Thrust Play Adjustment

— Playback Mode —

TUNER & CASSETTE BOARD





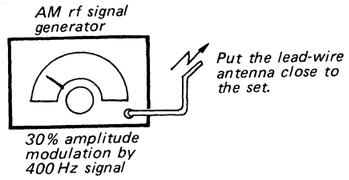
1. Disconnect a lead wire (white) of the motor and connect the dc ammeter as shown above.
2. Turn the thrust screw counterclockwise until the screw tip is detached from the flywheel shaft.
3. Gradually turn the thrust screw clockwise to the position where the motor current suddenly increases.
4. Then, turn the thrust screw counterclockwise about ¼ turn from the position obtained in step 3.

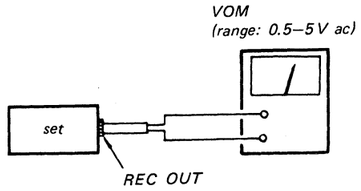
3-2. ELECTRICAL ADJUSTMENTS

AEP model

MW SECTION

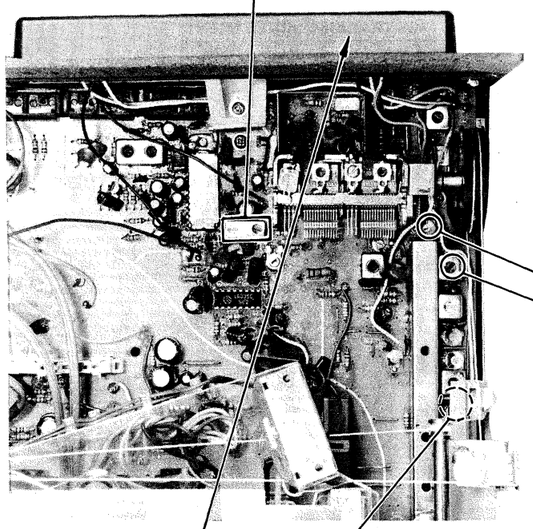
Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: MW





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ALIGNMENT	
Adjust for maximum reading on VOM.	
468 kHz	
CFU101	



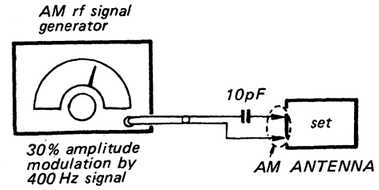
MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for maximum reading on VOM .	
CT52	1680 kHz
L52	520 kHz

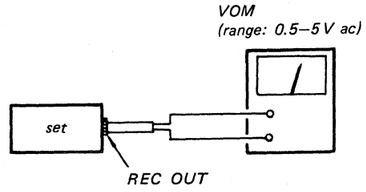
L55	CT55
620 kHz	1400 kHz
Adjust for maximum reading on VOM.	
MW TRACKING ADJUSTMENT	

AEP model

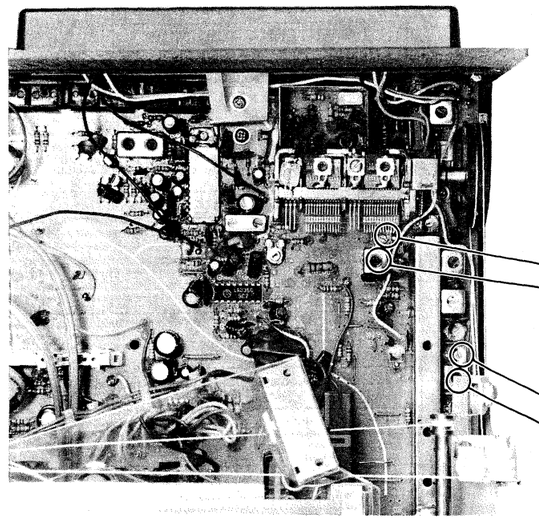
SW SECTION

Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: SW





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



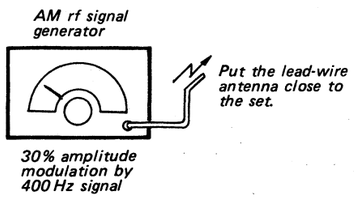
SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM.	
CT53	16.1 MHz
L53	5.5 MHz

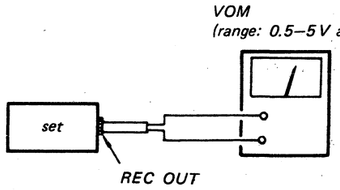
SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM.	
CT56	16.1 MHz
L56	5.5 MHz

AEP model

LW SECTION

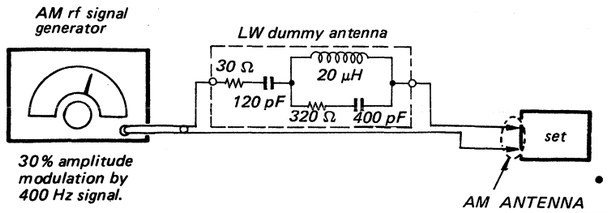
Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: LW



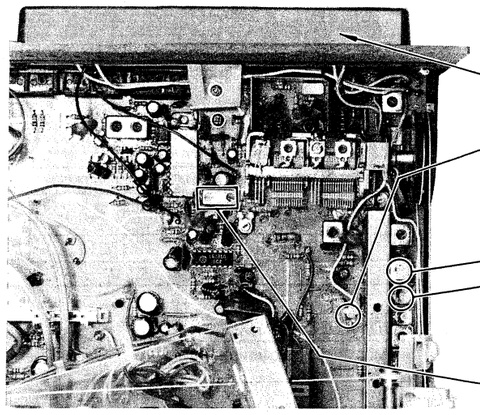


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

- LW TRACKING ② ADJUSTMENT



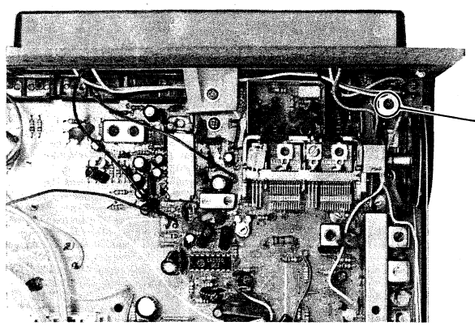
- Perform the LW TRACKING ADJUSTMENT in the numerical order given.



LW TRACKING ① ADJUSTMENT	
LW ANTENNA SELECTOR switch (S7) : BUILT-IN Adjust for a maximum reading on VOM	
L54	170 kHz
CT54	310 kHz

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM.	
L51	145 kHz
CT51	365 kHz

AM IF ALIGNMENT	
Adjust for a maximum reading on VOM.	
CFU101	468 kHz

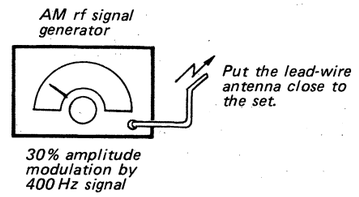


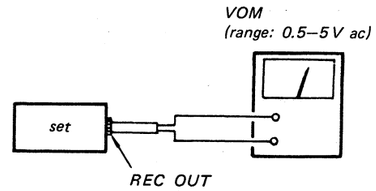
LW TRACKING ② ADJUSTMENT	
LW ANTENNA SELECTOR switch (S7) : EXT Adjust for a maximum reading on VOM.	
L57	240 kHz

E model

MW SECTION

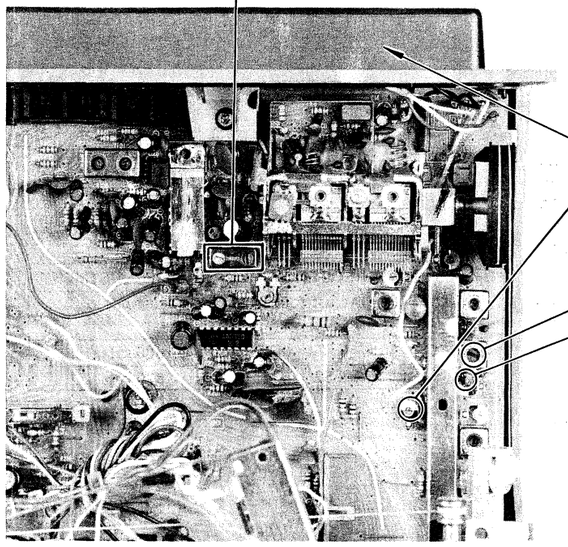
Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: MW





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ALIGNMENT
Adjust for maiimum reading on VOM.
468 kHz
CFU101



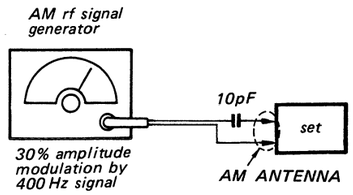
MW TRACKING ADJUSTMENT	
Adjust for maximum reading on VOM .	
L54	620 kHz
CT54	1400 kHz

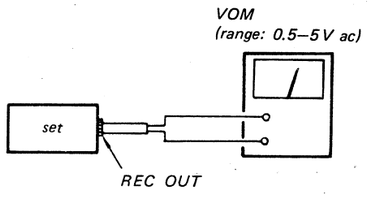
MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for maximum reading on VOM .	
L51	520 kHz
CT51	1680 kHz

E model

SW1, 2 SECTION

Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: SW1 or SW2





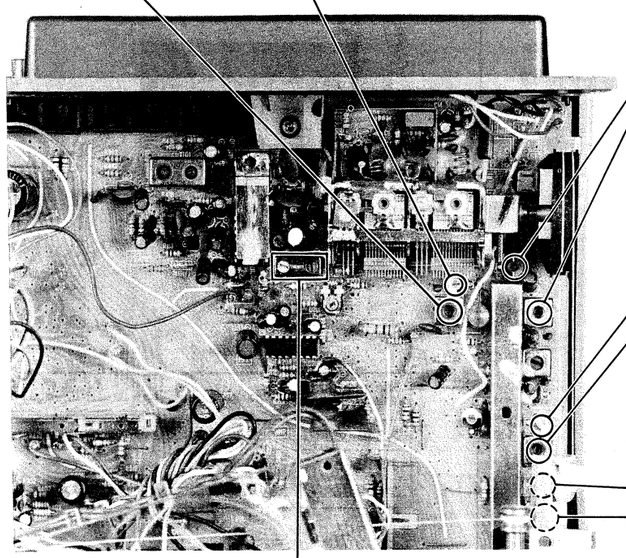
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

SW 2 FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM.	
6.8 MHz	18.4 MHz
L53	CT53

SW 1 FREQUENCY COVERAGE ADJUSTMENT	
Adjust for maximum reading on VOM.	
CT52	6.5 MHz
L52	2.1 MHz

SW2 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM.	
CT56	18.4 MHz
L56	6.8 MHz

SW1 TRACKING ADJUSTMENT	
Adjust for maximum reading on VOM.	
CT55	6.5 MHz
L55	2.1 MHz

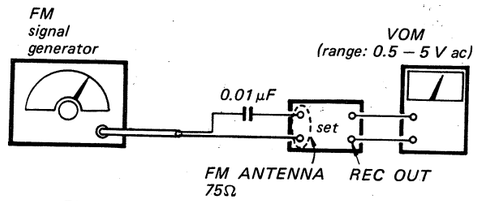


CFU101
468 kHz
Adjust for a maximum reading on VOM.
AM IF ALIGNMENT

FM SECTION (AEP, E model)

FM FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

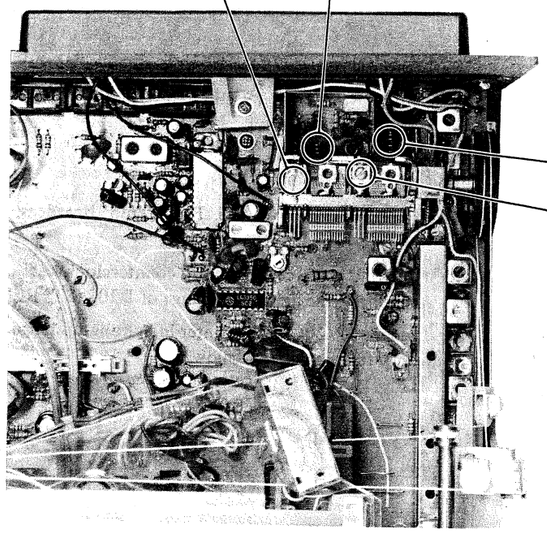
Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: FM MONO



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM.	
108.5 MHz (108 MHz)	87.1 MHz (87.5 MHz)
CT2	L3

( ): in West Germany

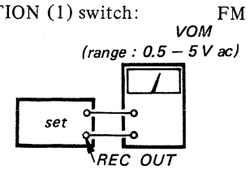


FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM.	
L1	87.1 MHz (87.5 MHz)
CT1	108.5 MHz (108 MHz)

( ): in West Germany

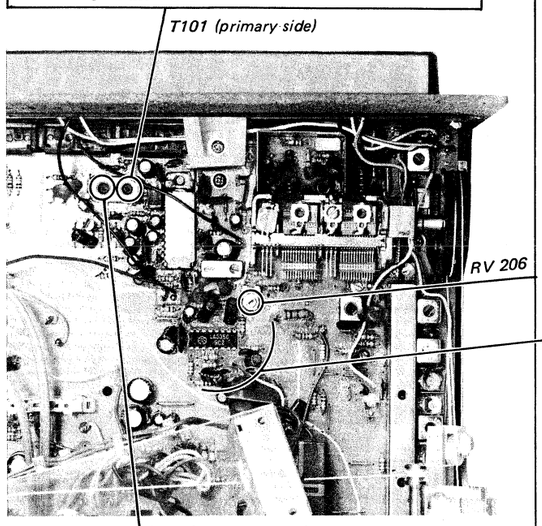
FM DISCRIMINATOR ALIGNMENT 1

Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: FM MONO



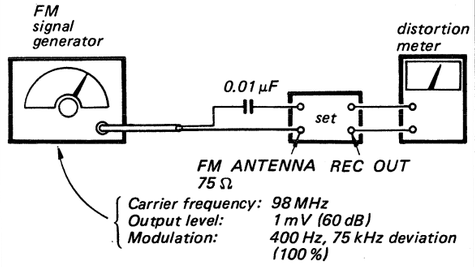
Procedure:

1. Detune the set.
2. Adjust T101 (primary side) for a maximum reading on the VOM.



FM DISCRIMINATOR ALIGNMENT 2

Setting: FUNCTION (2) switch: TUNER
FUNCTION (2) switch: FM MONO



Procedure:

Adjust T101 (secondary side) for a minimum reading on the distortion meter.

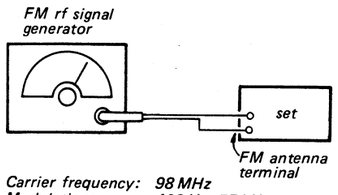
- Perform this adjustment after the FM discriminator alignment 1.

19 kHz ADJUSTMENT

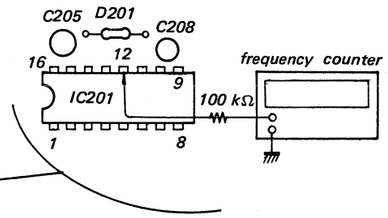
Setting: FUNCTION (2) switch: TUNER
FUNCTION (1) switch: FM STEREO

A) Regular Method

Procedure:



Carrier frequency: 98 MHz
Modulation: 400 Hz, 75 kHz deviation (100%)
Output level: 1 mV (60 dB)

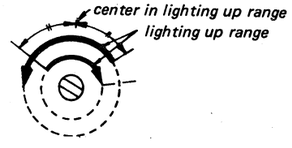


1. Tune the set to 98 MHz.
2. Adjust RV206 for 19 kHz ±30 Hz on the counter.

B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV206 clockwise or counterclockwise and memorize the lighting-up range of D202 (STEREO).
3. Secure RV206 at the center in lighting-up range of both turns as shown below.



TAPE RECORDER SECTION (AEP, E model)

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

Switches and controls should be set as follows unless otherwise specified.

EQ switch . . . . . TYPE 1
FUNCTION (2) switch . . . . . AUX
MONITOR switch. . . . . CASSETTE/(MIC)
BIAS switch . . . . . LOW

- Set the BIAS and EQ switches according to the tape as follows.

Tape	BIAS switch	EQ switch
CS-10	MED	TYPE I
CS-25	HIGH	TYPE II
CS-30	MED	TYPE III

Standard Record:

Supply the standard input signal to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	AUX
source impedance	600 Ω	47 kΩ
input level	3.1 mV (–48 dB)	0.44 V (–5 dB)

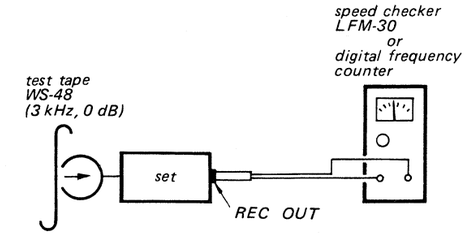
Standard Output Level

	REC OUT
load impedance	10 kΩ
output level	0.25 V (–10 dB)

Tape Speed Adjustment

Procedure:

Mode: playback



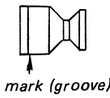
Specification:

Speed checker	Digital frequency counter
–2 – +2.5 %	2,940 – 3,075 Hz

Frequency difference between beginning and end of tape should be within 1 % (30 Hz).

Adjustment Location:

If necessary, replace the motor pulley.

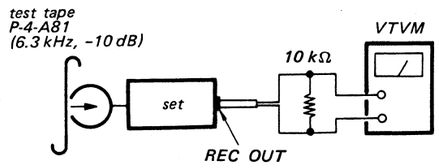


Motor pulley Part No.	Marking	Tape speed change
3-549-088-01	one groove	up ↕ down
3-549-088-11	no mark	
3-549-088-21	two grooves	

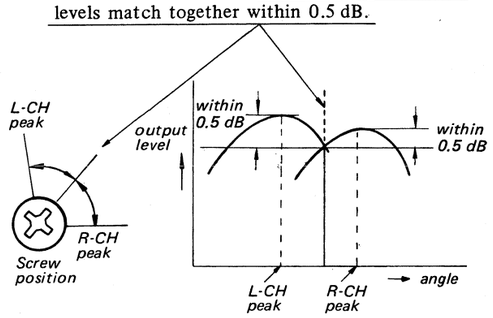
Record/playback Head Azimuth Adjustment

Procedure:

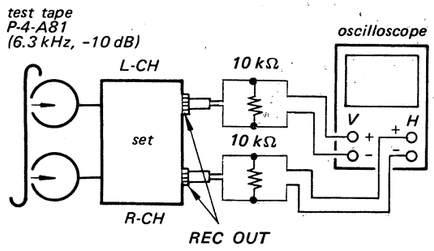
1. Mode: playback



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw where both of output levels match together within 0.5 dB.

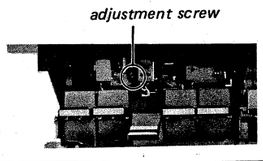


3. Phase Check
   Mode: playback



Screen pattern				
in phase	45°	90°	135°	180°
good			wrong	

Adjustment Location:

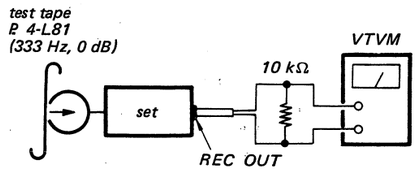


Playback Level Adjustment

Setting: EQ switch: TYPE I

Procedure:

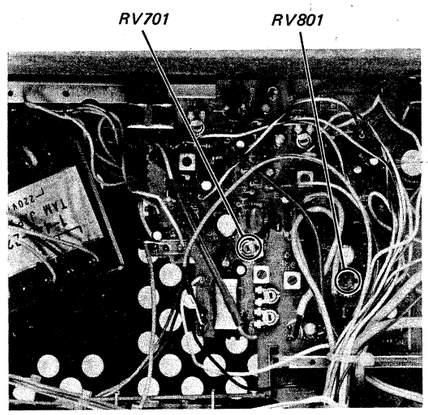
1. Mode: playback



2. Adjust RV701, RV801 so that the REC OUT becomes −10 dB.

Adjustment Location:

– tuner & cassette board –

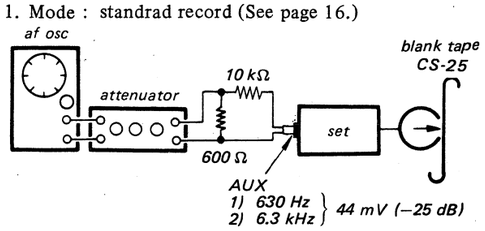


Record Bias Adjustment

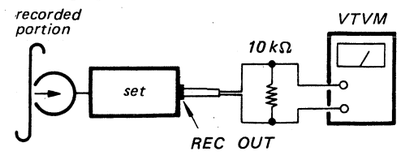
Setting: EQ switch: TYPE II
BIAS switch : HIGH (II)
DOLBY NR switch: OFF
ISS switch: 2

Procedure:

1. Mode : standrad record (See page 16.)



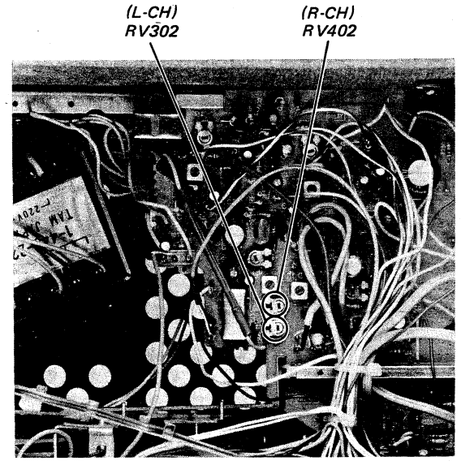
2. Mode : playback



3. Confirm that the playback output levels of 630 Hz and 6.3 kHz are within ± 1 dB. If necessary, adjust RV302 and RV402 and repeat steps 1 and 2 to obtain this specification.

Adjustment Location:

– tuner & cassette board –

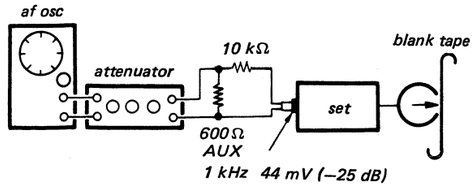


Record Level Adjustment

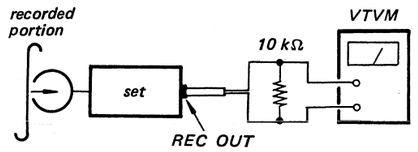
Setting: DOBLY NR switch: OFF

Procedure:

Mode: standard record (See page 16.)



Mode: playback

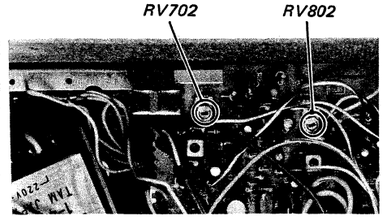


1. Load tape CS-25. Switch the EQ switch to TYPE II and BIAS switch to HIGH (II) and record the tape.
2. Playback the tape and confirm that the REC OUT level is −10 dB.
3. If necessary, adjust RV702 and RV802 under REC mode and repeat steps 1 and 2 to obtain the specification above.
4. Load tape CS-10. Switch the EQ switch to TYPE I and BIAS switch to MED and record the tape. Playback the tape and confirm that the output is within the specification shown below.
5. Load tape CS-30. Switch the EQ switch to TYPE III and BIAS switch to MED (I/III) and record the tape. Playback the tape and confirm that the output is within the specification shown below.

Specification: −9.5 to −10.5 dB

Adjustment Location:

–tuner & cassette board –

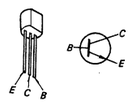


SECTION 4
DIAGRAMS

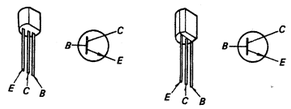
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

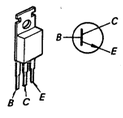
Q1–3: 2SC930
Q301, 401, Q302, 402: 2SC1362 (2SC1570G)



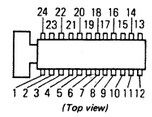
Q101: 2SC1364 (2SC945P)



Q901: 2SC1173

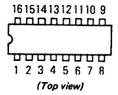


IC101: CX168



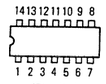
IC102: TL489CP (TL489C)

IC201: LA3350A (LA3350)



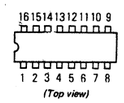
IC301: μPC4558C

IC311, 411: SN16880N

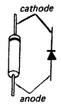


IC501, 601: HA1350S (HA1350)

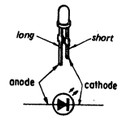
IC701, 801: CX174



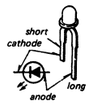
D101–104, D201: 1S1555 (1S2473)
D904: RD24E (RD24E-B)
D905: 1S1555 (1S2471)



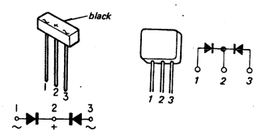
D105–109, D311–314, D411–414: SLB26GG1
D202: SLP131B
D315, 415: SLB26UR



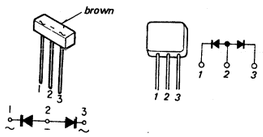
D403: SY 405D1 (SY405D)
D404: TLR124 (SR 105D)



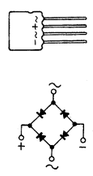
D901: S3VC40 (MI151)



D902: S3VC40R (MI151R)

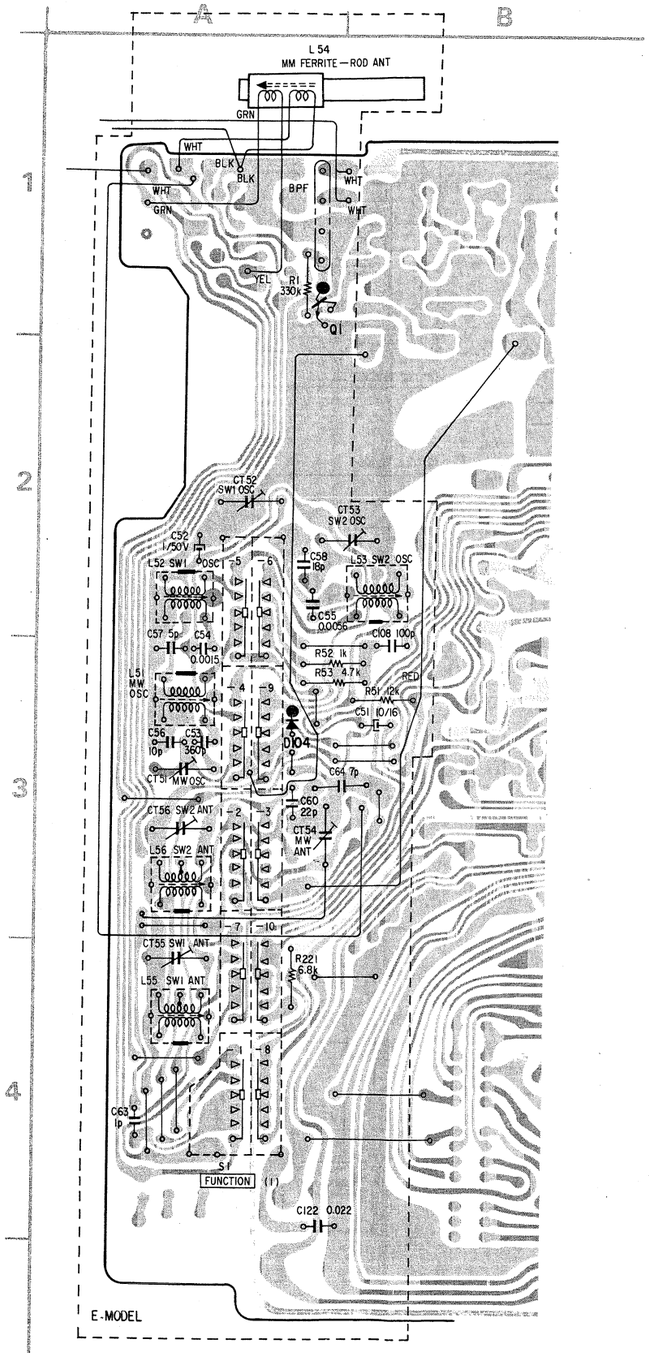


D903: DS185E



4-1. MOUNTING DIAGRAM (Continued on the next four pages.)

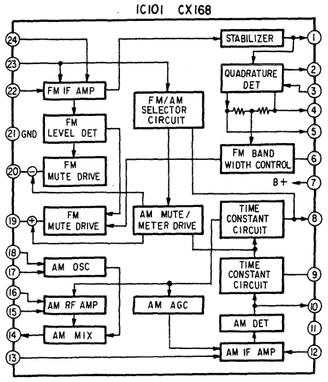
— Component Side —



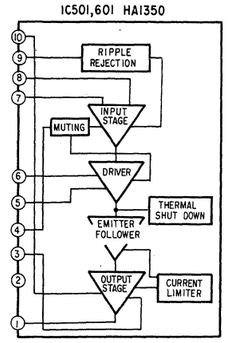
MOUNTING DIAGRAM (Continued from page 20.)

– Conductor Side –

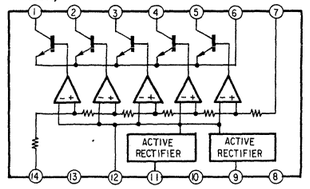
IC101 CX168



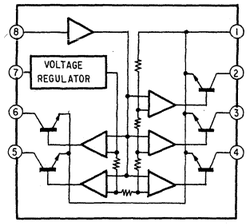
IC501,601 HA1350



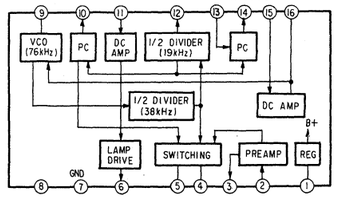
IC311, 411



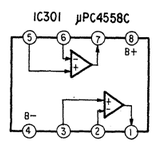
IC102 TL489C



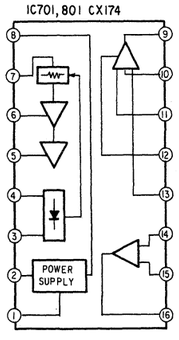
IC201 LA3350



IC301 μPC4558C

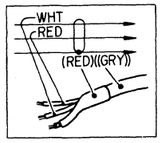


IC701, 801 CX174

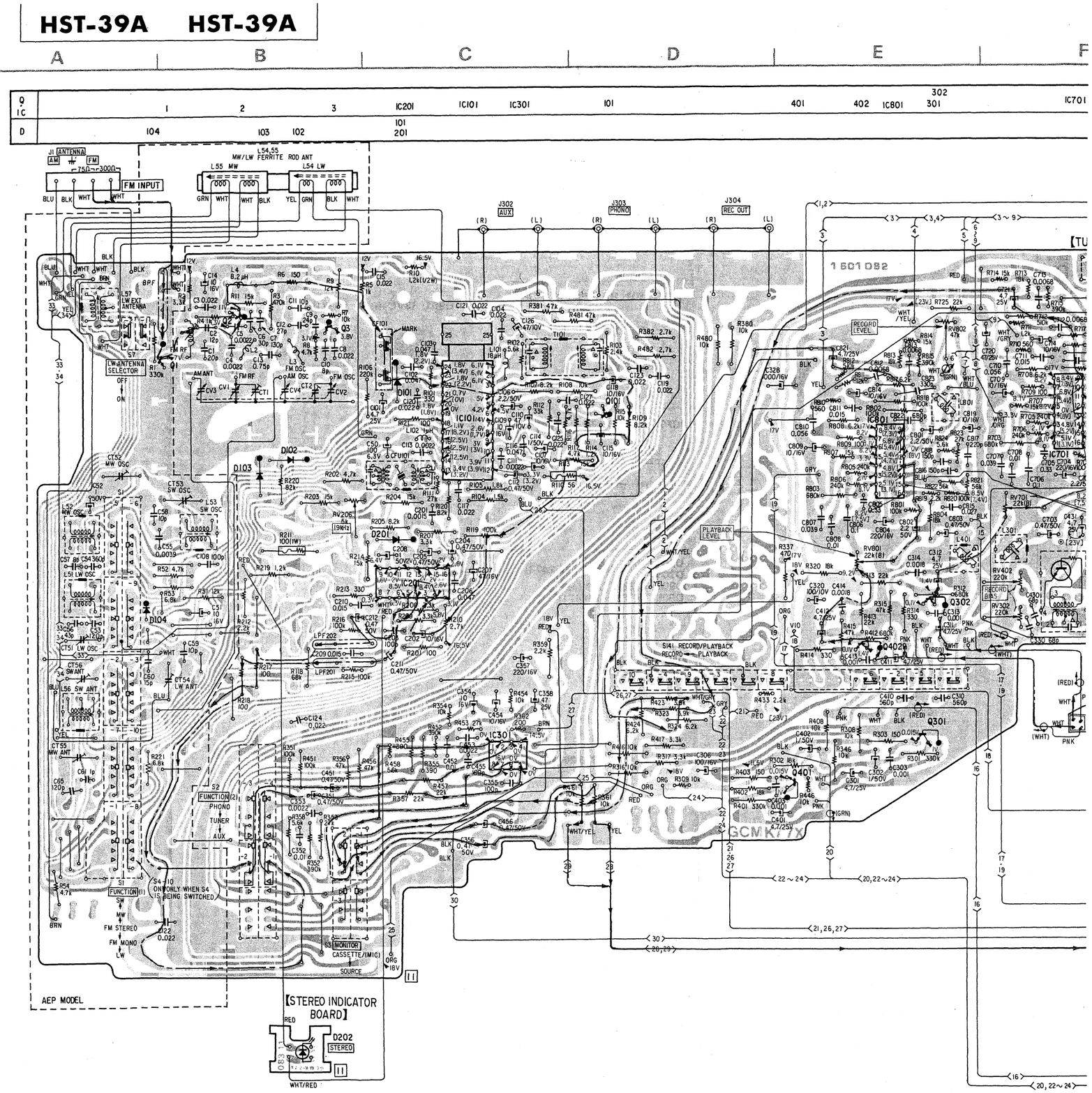


Note:

- [ ]← : indicates side identified with part number.
- Color code of sleeving over the end of the jacket.



- : B+ pattern
- : B– pattern
- : FM signal path
- : L-CH signal path
- : R-CH signal path
- : L-CH or R-CH signal path



302 301	IC701	Q IC
	905	D

IC	IC411 415 414 413 412 411 109 108 107 106 105 404	IC311 315 314 313 312 311
D		

Q, IC	D
IC601	901 902
IC501	903
901	904
Q, IC	D

【TUNER & CASSETTE BOARD】

【LED METER BOARD】

【TUNING METER BOARD】

【HEADPHONE BOARD】

【LAMP BOARD】

【LAMP BOARD】

【TONE& POWER& POWER SUPPLY BOARD】

【TAPE SELECT BOARD】

S18 VOLTAG SELECTOR 110V 220V 120V 240V

E MODEL

AEP, UK MODEL

OUTPUT(R) OUTPUT(L) J502 SPEAKER (8Ω)

J706 HEADPHONES

S17 MOTOR M901 MOTOR

HE301 PLAYBACK LEVEL RECORD LEVEL RECORD BIAS

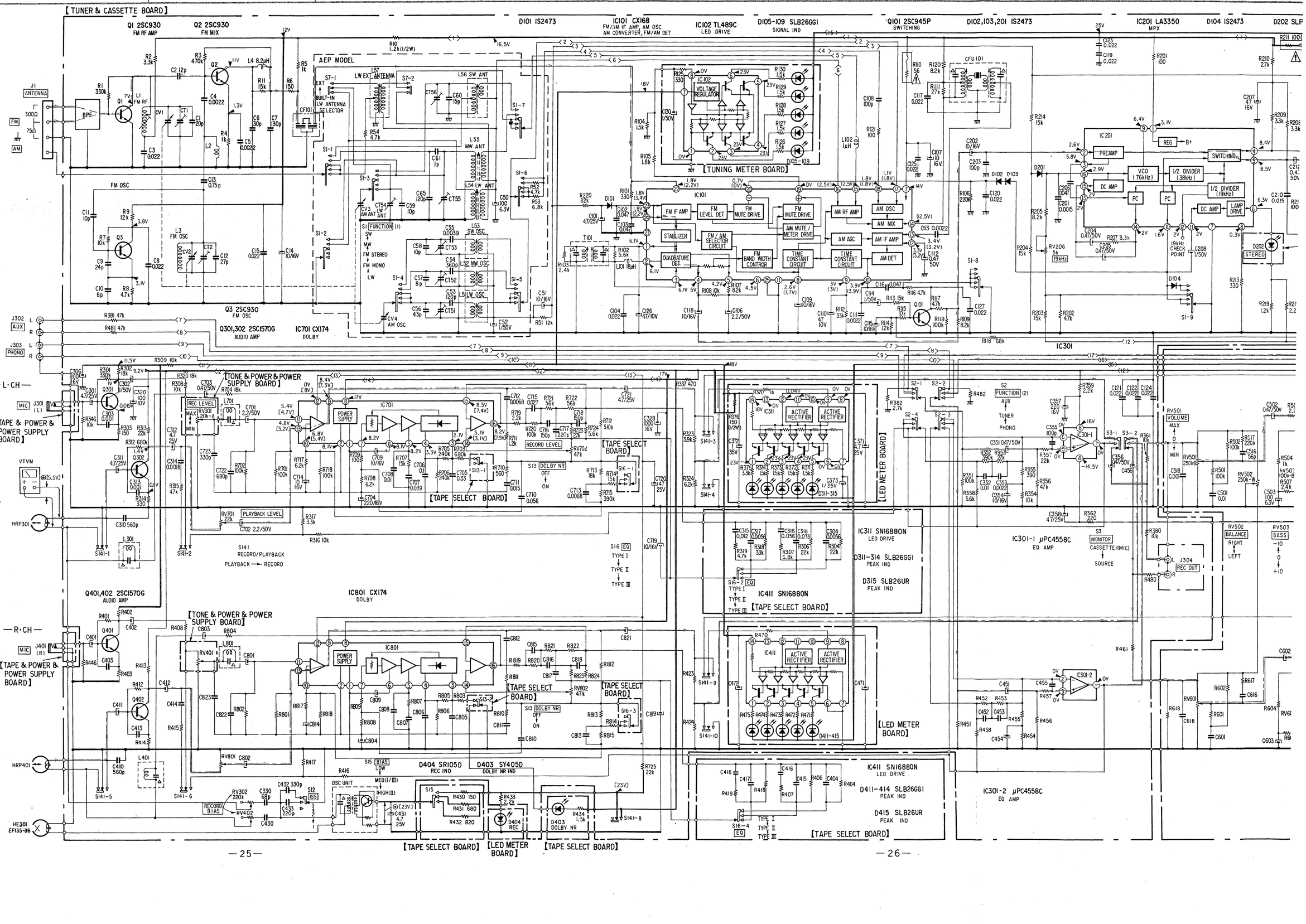
S12 ISS S16 EQ TYPE I TYPE II TYPE III S15 BIAS LOW→MODE(II)→HIGH(I) S13 DOLBY NR OFF→ON

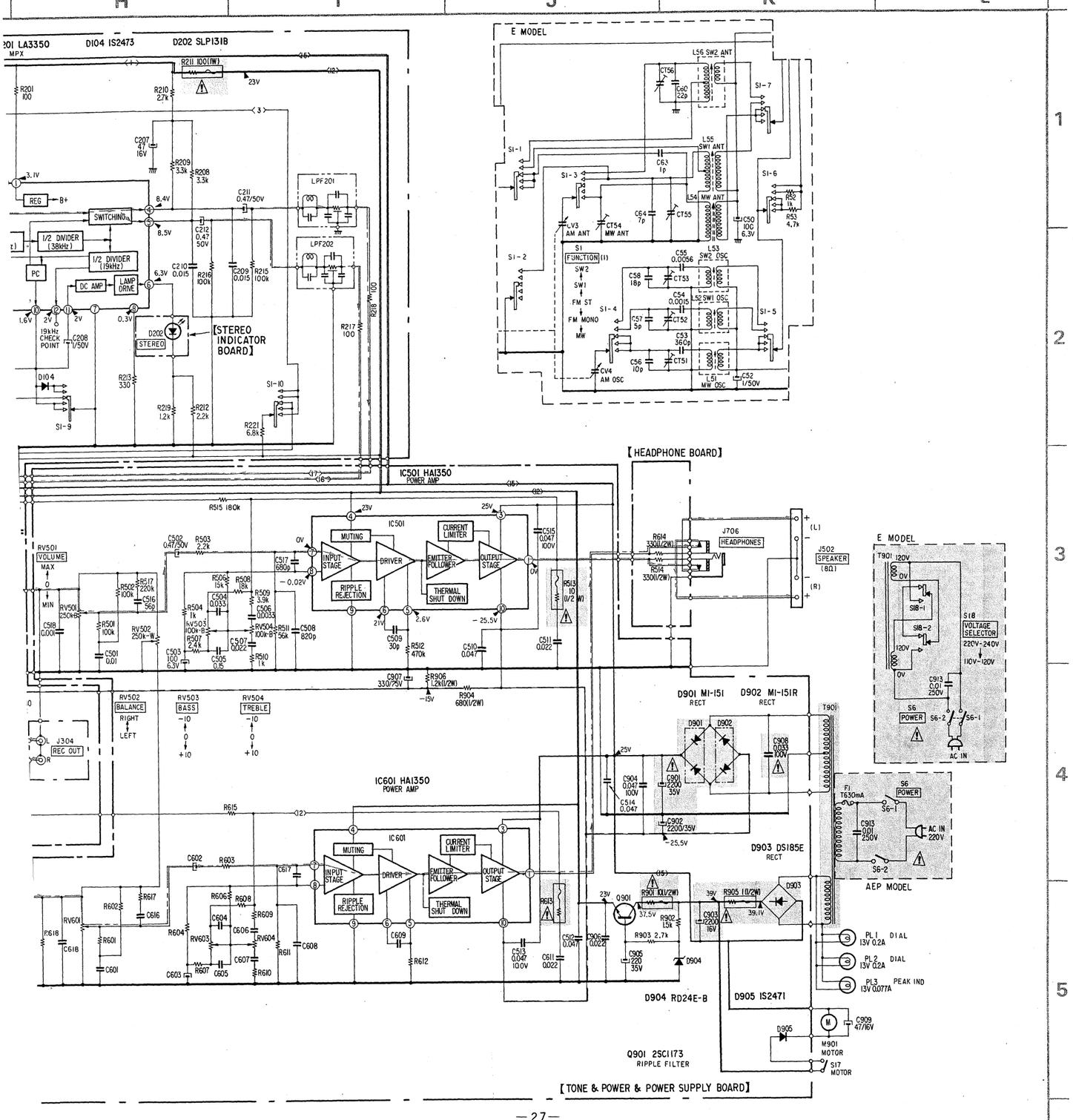
S6 POWER AC IN 220V

PEAK (RIGHT) PEAK (LEFT) VOLUME MAX←→MIN BALANCE RIGHT←→LEFT TREBLE BASS REC LEVEL MAX←→MIN MIC(MIX)

PL2 DIAL 13V 0.2A PL1 DIAL 13V 0.2A PL3 PEAK IND 13V 0.077A

4-2. SCHEMATIC DIAGRAM





Note:

- Components for right channel have same values as for left channel.
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——: B+ bus.
- – – –: B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (20kΩ/V).

  ( ) : AM

  [ ] : RECORD

  no mark: FM for radio section/playback for tape recorder section.
- AC voltage (◉ mark) readings in the bias oscillator are taken with a VTVM.
- ⊛ signal path

  – – – –: FM

  – – –▷: L-CH

  – – –▷: R-CH
- **Switch**

Ref. No.	Switch	Position
S1-1–10	FUNCTION (1)	FM ST
S2-1–4	FUNCTION (2)	PHONO
S3-1–4	MONITOR	CASSETTE/(MIC)
S6-1–2	POWER	OFF
S7-1–2	LW ANTENNA SELECTOR (AEP model)	BUILT-IN
S12	ISS	3
S13-1–2	DOLBY NR	OFF
S15	BIAS	MED (I/III)
S16-1–4	EQ	TYPE I
S17	MOTOR	OFF
S18	VOLTAGE SELECTOR (E model)	————
S141-1–10	RECORD/PLAYBACK	PLAYBACK

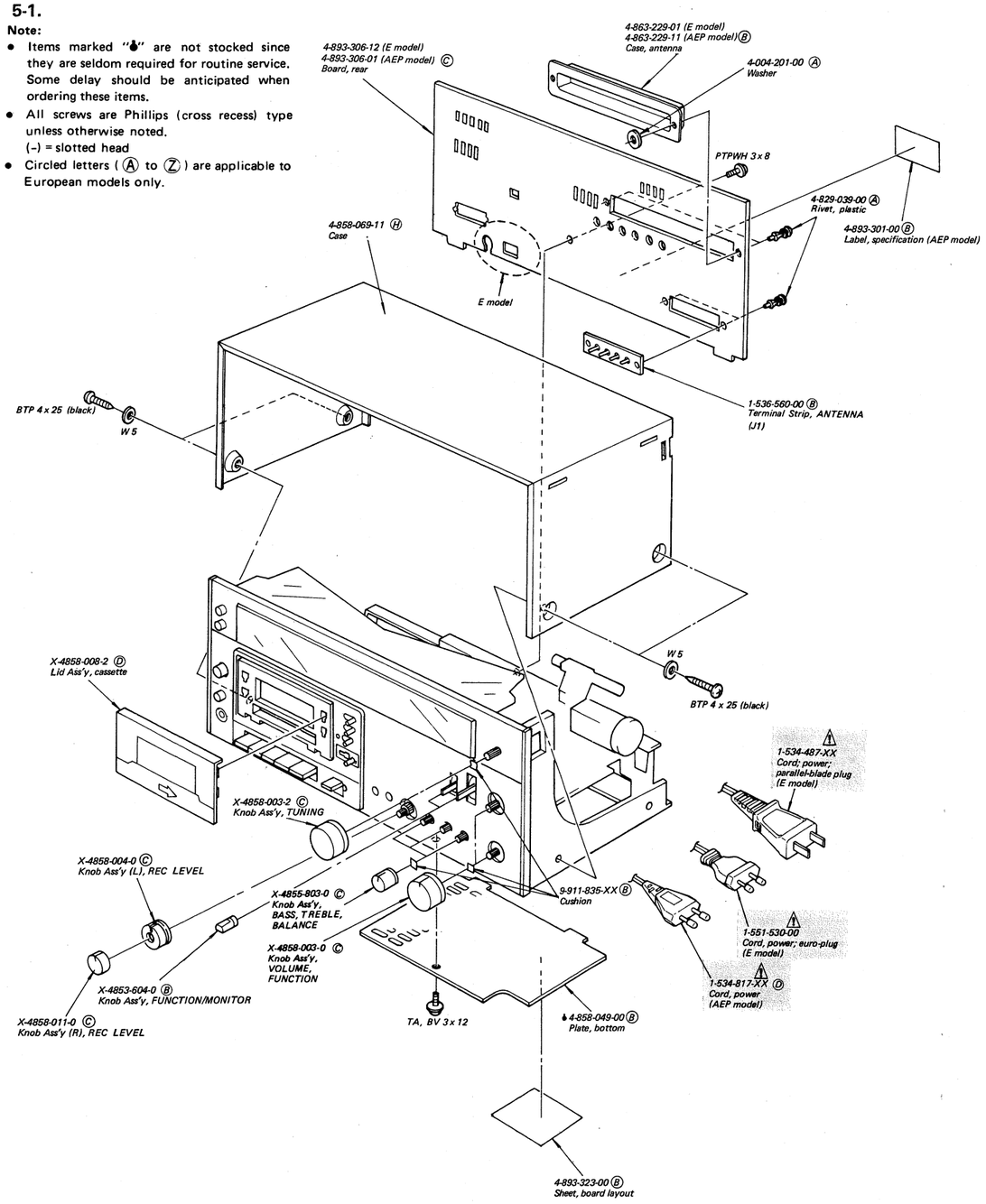
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 5
EXPLODED VIEWS

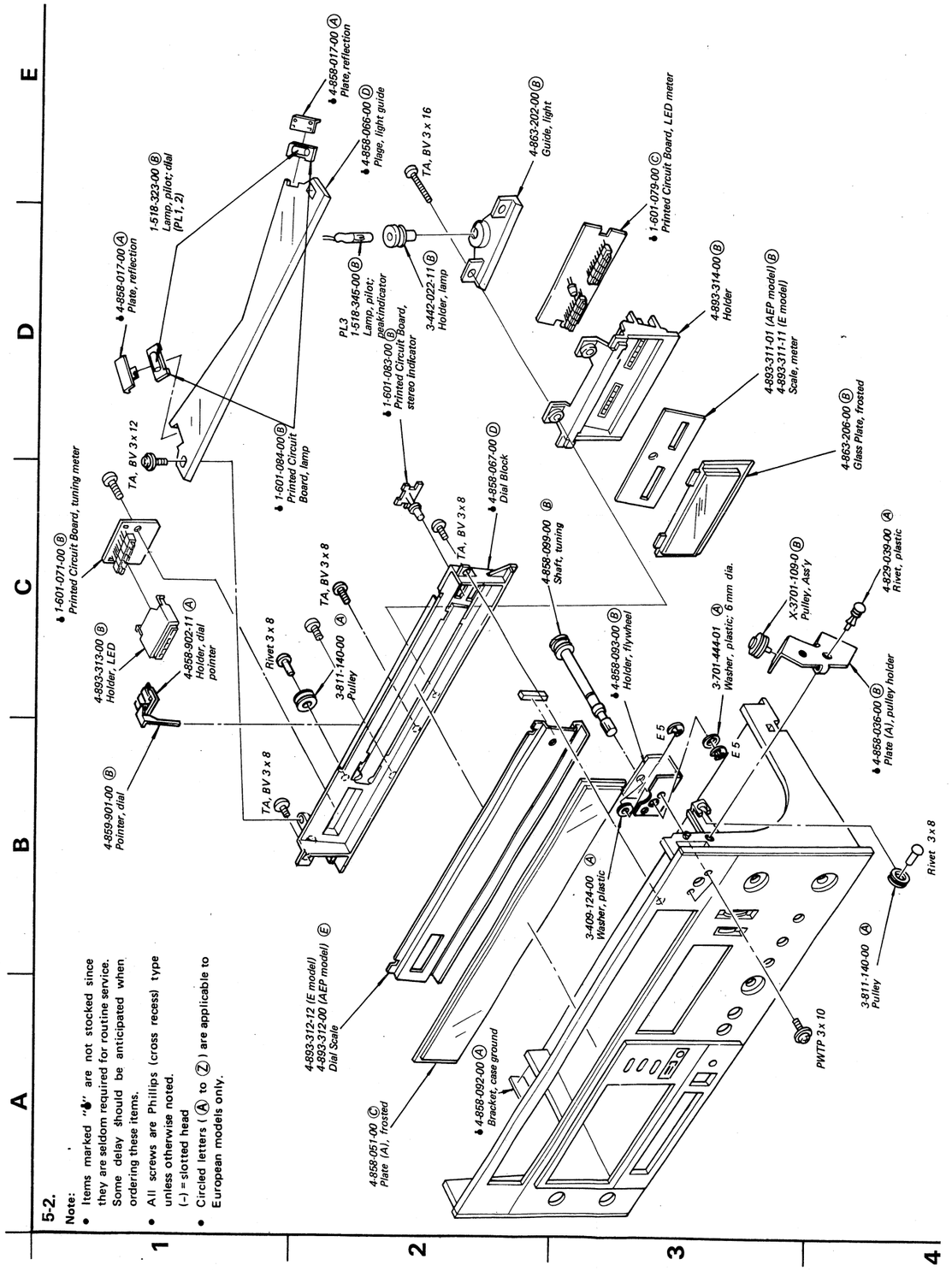
5-1.

Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



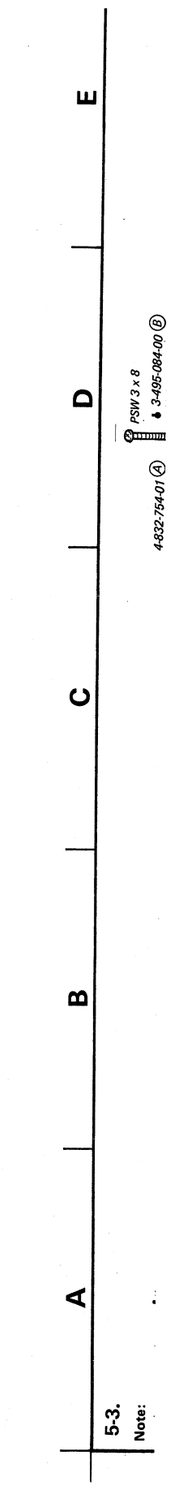
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



5-2.

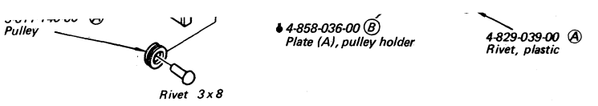
Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



5-3.

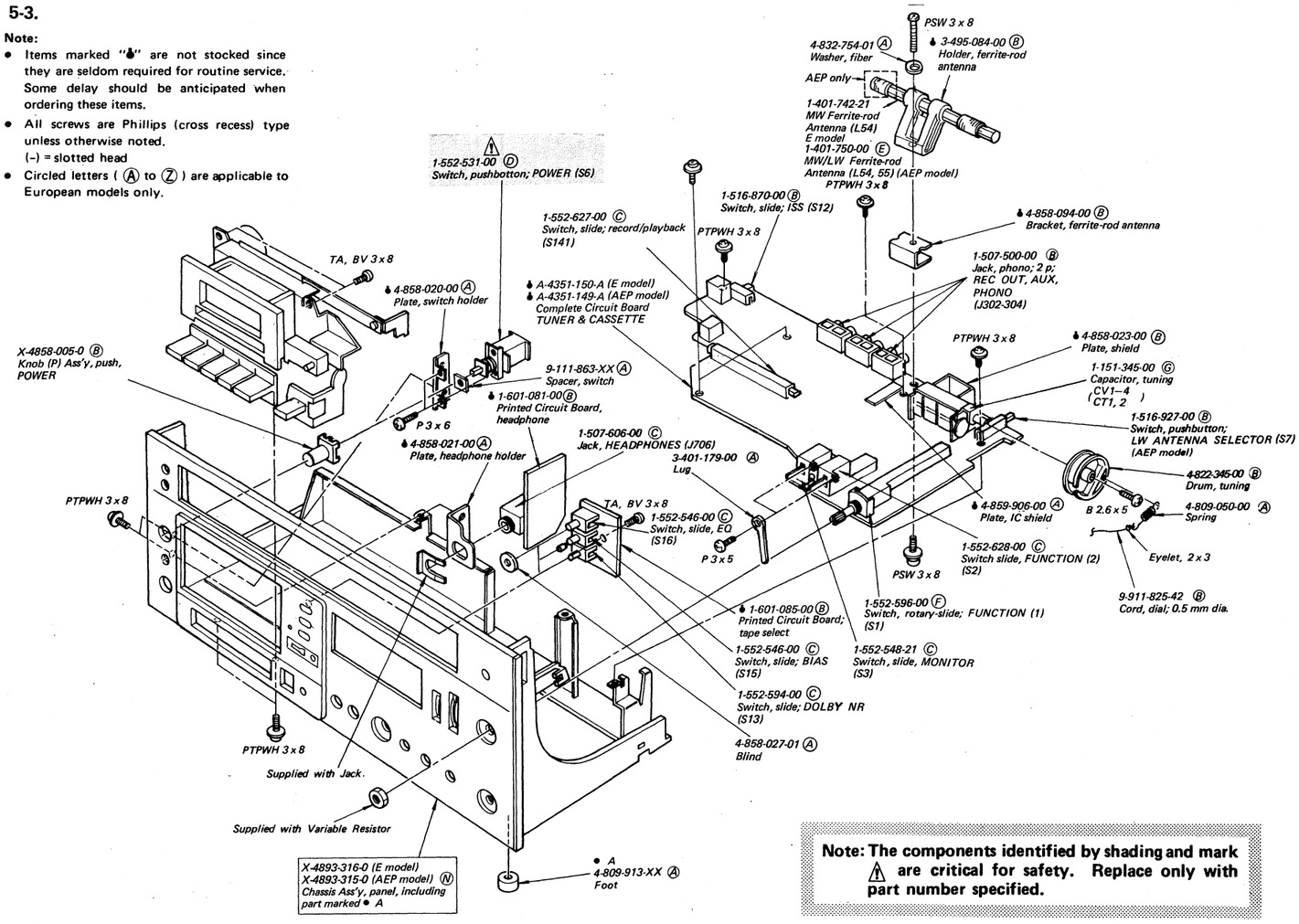
Note:



5-3.

Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- Circled letters ((A) to (Z)) are applicable to European models only.

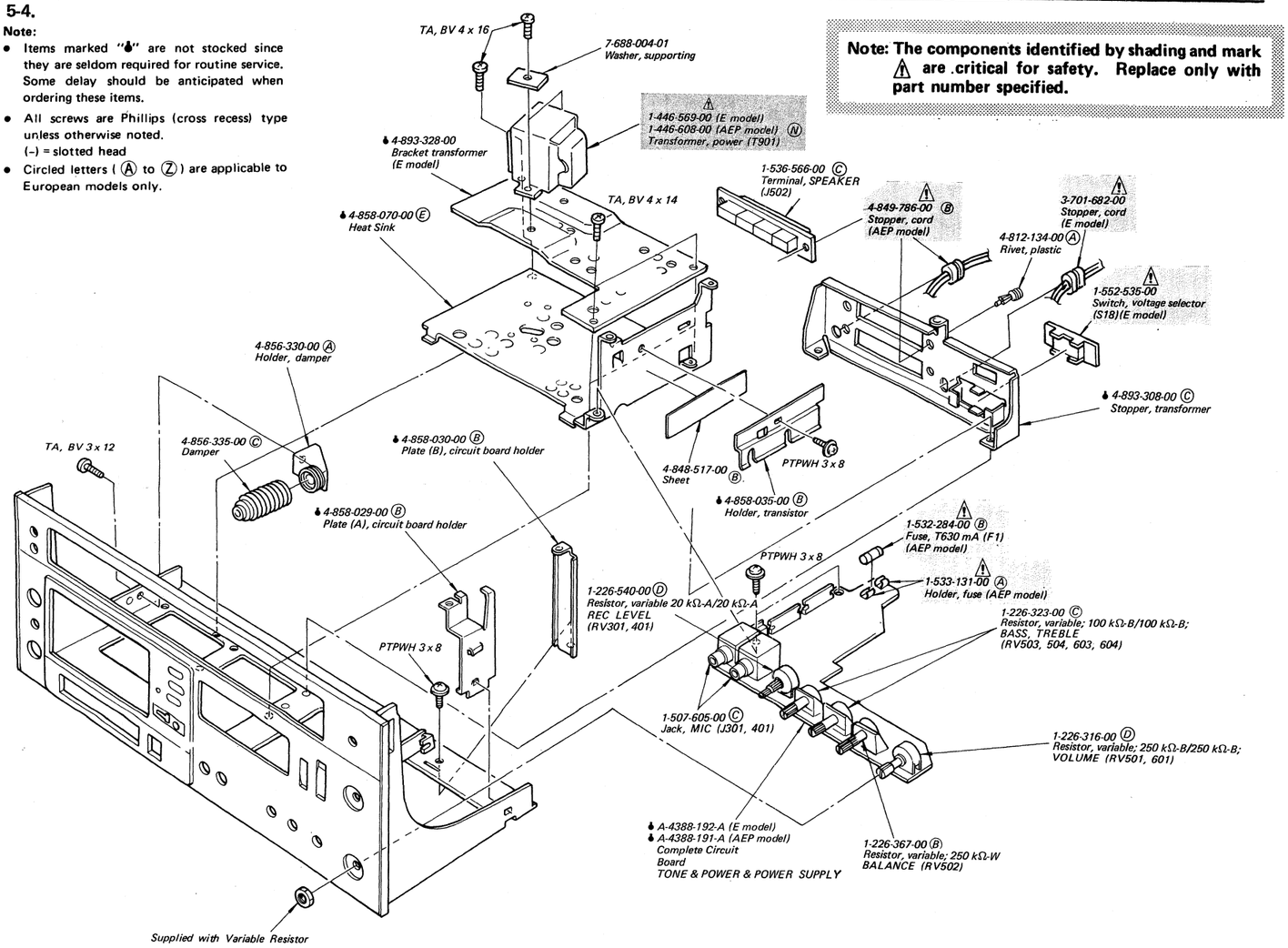


Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-4.

Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- Circled letters ((A) to (Z)) are applicable to European models only.



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

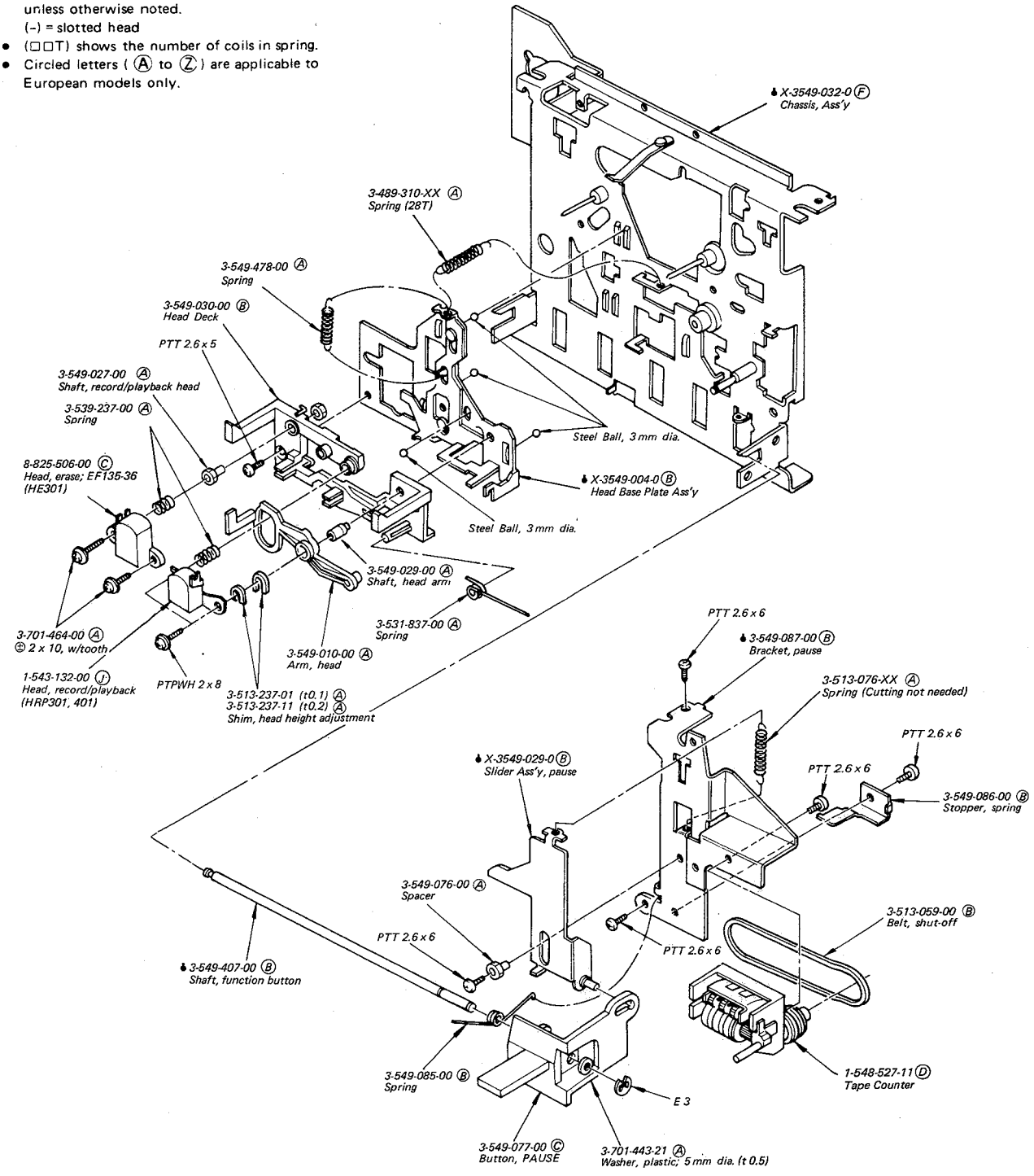
A B C D

1 2 3 4 5

5-5.

Note:

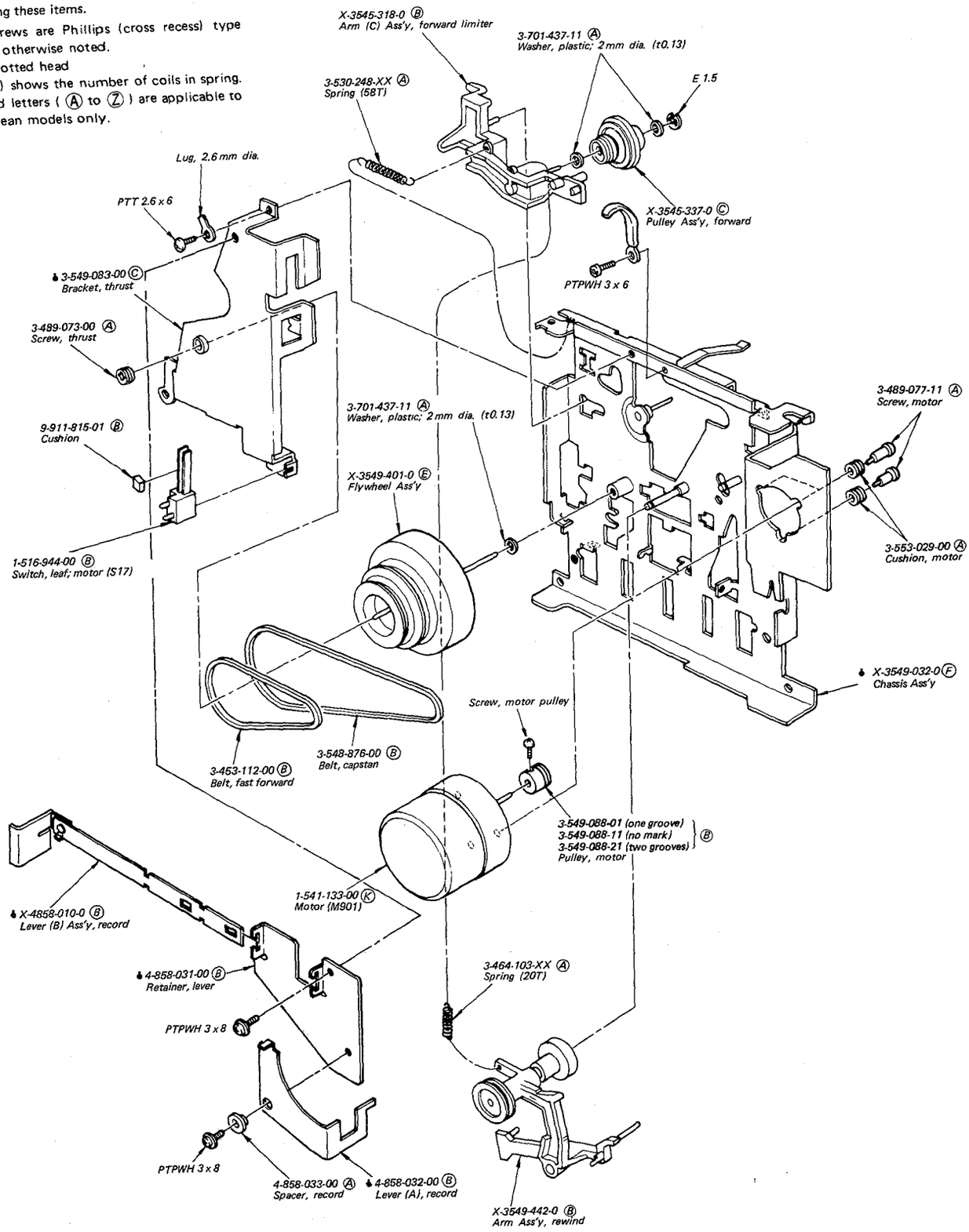
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



5-6.

Note:

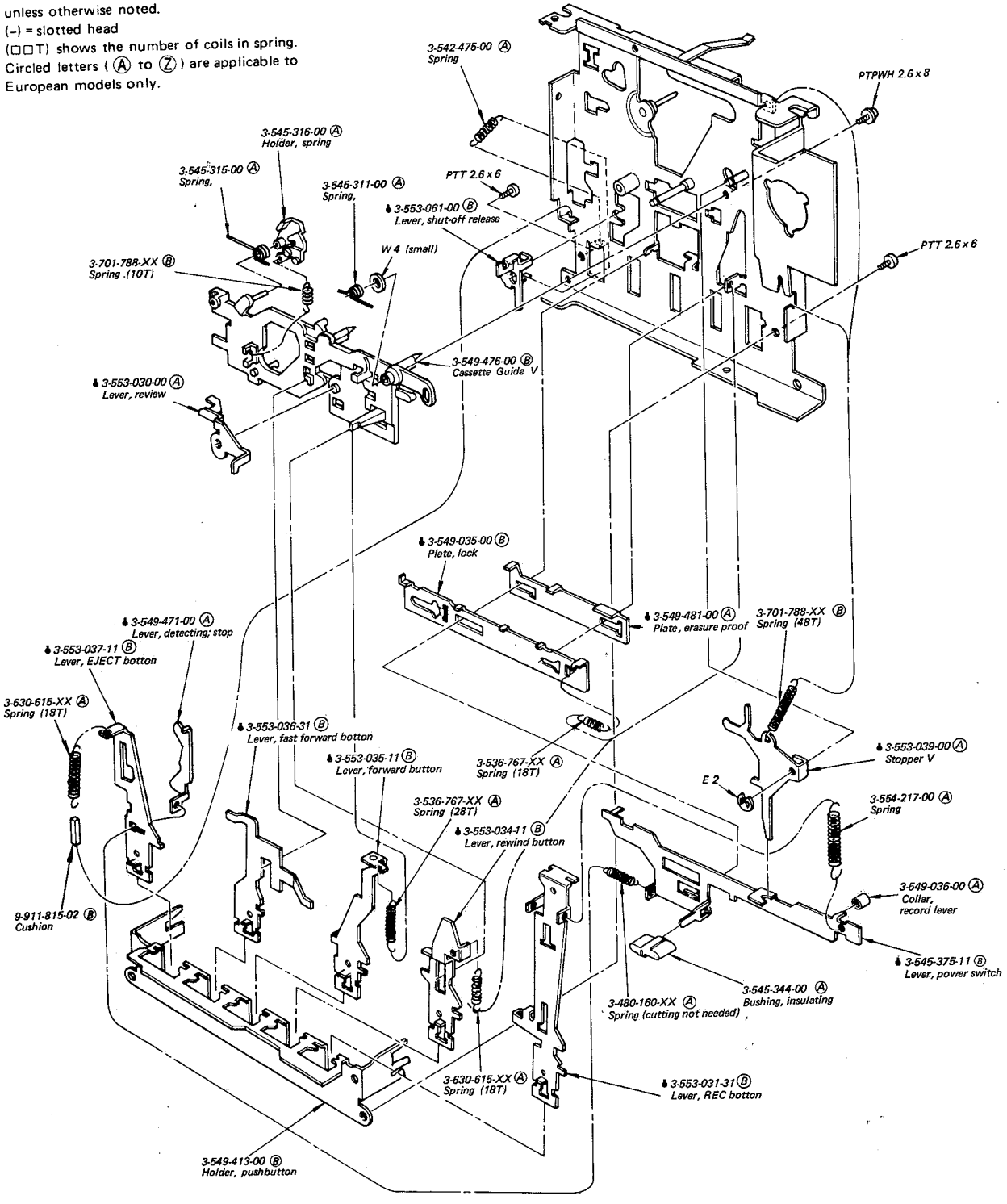
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



5-7.

Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



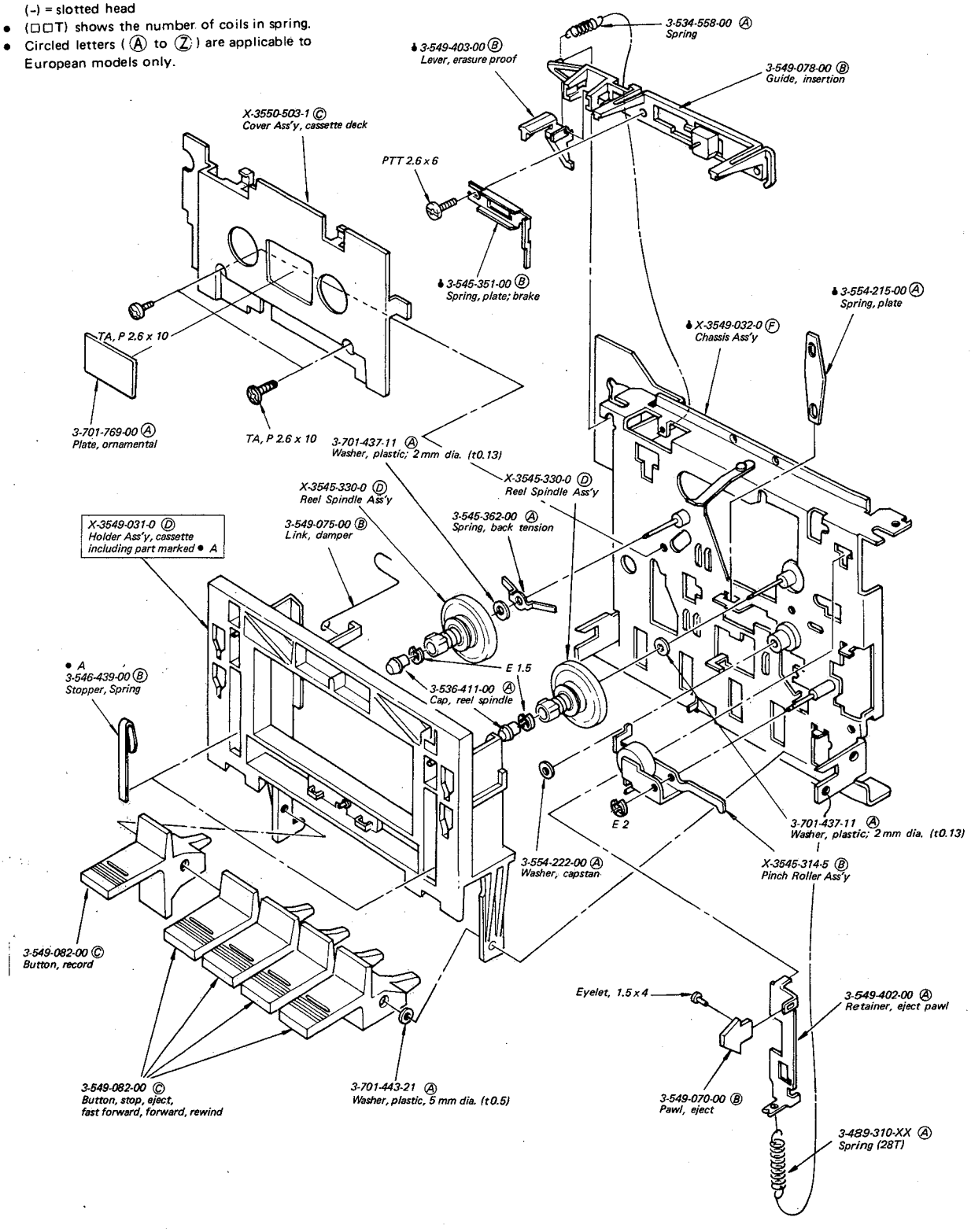
A B C

1 2 3 4 5

5-8.

Note:

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



SECTION 6
ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*
		SEMICONDUCTORS
		Transistors
Q1-3	8-729-803-04	Ⓑ 2SC930
⇒Q101	8-729-633-47	Ⓑ 2SC1364
⇒Q301, 401 ⇒Q302, 402	8-729-665-47	Ⓑ 2SC1362
Q901	8-783-200-35	Ⓒ 2SC1173
		ICs
IC101	8-751-680-01	Ⓙ CX168
⇒IC102	8-759-904-89	Ⓓ TL489CP
⇒IC201	8-759-833-50	Ⓕ LA3350A
IC301	8-759-145-58	Ⓓ μPC4558C
IC311, 411	8-759-968-80	Ⓓ SN16880N
⇒IC501, 601	8-759-313-50	Ⓗ HA1350S
IC701, 810	8-759-101-74	Ⓗ CX174
		Diodes
⇒D101-104	8-719-815-55	Ⓑ 1S1555
D105-109	8-719-902-63	Ⓑ SLB26GG1
D201	8-719-815-55	Ⓑ 1S1555
D202	8-719-901-31	Ⓑ SLP131B
D311-314 D411-414	8-719-902-63	Ⓑ SLB26GG1
D315, 415	8-719-902-62	Ⓑ SLB26UR
D403	8-719-101-45	Ⓑ SY405D1
⇒D404	8-719-812-41	Ⓑ TLR124
⇒D901	⚠ 8-719-500-34	Ⓒ S3VC40
⇒D902	⚠ 8-719-501-34	Ⓒ S3VC40R
D903	⚠ 1-800-914-11	Ⓒ DS185E
⇒D904	8-719-124-07	Ⓑ RD24E
⇒D905	8-719-815-55	Ⓑ 1S1555
		COILS
♦ L1	1-420-893-00	Ⓐ FM Rf
♦ L2	1-420-840-00	Ⓐ FM If Trap
♦ L3	1-420-919-00	Ⓐ FM OSC
L4	1-407-189-XX	Ⓑ 8.2 μH, microinductor
L51	1-405-813-00	Ⓑ LW OSC (AEP model)
	1-405-814-00	MW OSC (E model)
L52	1-405-814-00	Ⓑ MW OSC (AEP model)
	1-405-815-00	SW1 OSC (E model)
L53	1-405-812-00	Ⓑ SW OSC (AEP model)
	1-405-820-00	SW2 OSC (E model)
L54, 55	1-401-750-00	Ⓔ AM Ferrite-rod Antenna (AEP model)
L54	1-401-742-21	MW Ferrite-rod Antenna (E model)
L55	1-405-745-00	SW1 Antenna (E model)
L56	1-401-741-00	Ⓑ SW Antenna (AEP model)
	1-401-746-00	SW2 Antenna (E model)
L57	1-401-749-00	Ⓑ LW Antenna (AEP model)
L101	1-407-741-00	Ⓑ 18 μH, microinductor
L102	1-407-178-00	Ⓑ 1 μH, microinductor
L301, 401 L701, 801	1-409-337-00	Ⓑ Trap
		TRANSFORMERS
CFU101	1-403-827-00	Ⓓ AM IFT
T101	1-404-011-00	Ⓒ FM Discriminator
T901	⚠ 1-446-608-00	Ⓝ Power (AEP model)
	⚠ 1-446-569-00	Power (E model)
		CAPACITORS
		All capacitors are in μF and are ceramic unless otherwise noted. Common capacitors are omitted. Refer to the lists on pages 40 and 41 for their part numbers.
C9	1-101-982-00	Ⓐ 24 p
C10	1-102-684-00	Ⓐ 8 p
C11	1-101-978-00	Ⓐ 10 p
C12	1-102-643-00	Ⓐ 27 p
C56	1-102-871-00	Ⓐ 43 p (AEP model)
	1-102-999-00	10 p (E model)
C57	1-102-746-00	Ⓐ 8 p (AEP model)
	1-102-997-00	5 p (E model)
C58	1-102-285-00	Ⓑ 10 p (AEP model)
	1-102-296-00	18 p (E model)
C705, 805	1-131-454-00	Ⓑ 0.33 tantalum
C901, 902	⚠ 1-123-350-00	Ⓑ 2200 35V elect
C903	⚠ 1-123-325-00	Ⓑ 2200 16V elect
C908	⚠ 1-108-383-00	Ⓐ 0.033 100V ceramic
C913	⚠ 1-161-744-00	Ⓑ 0.01 250V ceramic
CT1, 2 CV1–4	1-151-345-00	Ⓗ Tuning
CT51–56	1-141-138-XX	Ⓑ Trimmer

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

• Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 39 for their part numbers.

R110	⚠1-212-875-00	Ⓐ	56	¼W	fusible
R211	⚠1-213-084-00	Ⓑ	100	1W	fusible
R513, 613	⚠1-212-958-00	Ⓑ	10	½W	fusible
R901	⚠1-212-958-00	Ⓑ	10	½W	fusible
R905	⚠1-217-422-00	Ⓑ	1	½W	fusible

RV206	1-226-235-11	Ⓑ	5 k-B; adjustable; 19 kHz
RV301, 401	1-226-540-00	Ⓓ	20 k-A; variable; REC LEVEL
⇒RV302, 402	1-226-240-00	Ⓑ	200 k-B; adjustable; record bias
RV501, 601	1-226-316-00	Ⓓ	250 k-B; variable; VOLUME
RV502	1-226-367-00	Ⓑ	250 k-W; variable; BALANCE
RV503, 603 RV504, 604	1-226-323-00	Ⓒ	100 k-B; variable; BASS, TREBLE
⇒RV701, 801	1-226-237-00	Ⓑ	20 k-B; adjustable; playback level
⇒RV702, 802	1-226-238-00	Ⓑ	50 k-B; adjustable; record level

SWITCHES

S1	1-552-596-00	Ⓕ	Rotary-slide; FUNCTION (1)
S2	1-552-628-00	Ⓒ	Slide; FUNCTION (2)
S3	1-552-548-21	Ⓒ	Slide; MONITOR
S6	⚠1-552-531-00	Ⓓ	Pushbutton; POWER
S7	1-516-927-00	Ⓑ	1 key; LW ANTENNA SELECTOR (AEP model)
S12	1-516-870-00	Ⓑ	Slide; ISS
S13	1-522-594-00	Ⓒ	Slide; DOLBY NR
S15, 16	1-552-546-00	Ⓒ	Slide; BIAS, EQ
S17	1-516-944-00	Ⓑ	leaf; motor
S18	⚠1-552-535-00		Voltage Selector (E model)
S141	1-552-627-00	Ⓒ	Slide; record/playback

JACKS

J1	1-536-560-00	Ⓑ	Terminal Strip, ANTENNA
J301, 401	1-507-605-00	Ⓒ	MIC
J302–304	1-507-500-00	Ⓑ	Phono; 2 p; AUX, PHONO, REC OUT
J502	1-536-566-00	Ⓒ	Terminal, SPEAKER
J706	1-507-606-00	Ⓒ	HEADPHONES

MISCELLANEOUS

BPF	1-231-313-00	Ⓑ	Bandpass Filter
CF101	1-527-248-XX	Ⓚ	Filter, solide state 10.7 MHz
F1	⚠1-532-284-00	Ⓑ	Fuse, T630 mA (AEP model)
M901	1-541-133-00	Ⓚ	Motor
LPF201 LPF202	1-231-303-00	Ⓒ	Lowpass Filter
HE301	8-825-506-00	Ⓒ	Head, erase; EF135–36
HRP301, 401	1-543-132-00	Ⓙ	Head, record/playback
PL1, 2	1-518-323-00	Ⓑ	Lamp, pilot; dial
PL3	1-518-345-00	Ⓑ	Lamp, pilot; peak indicator
	⚠1-533-131-00	Ⓐ	Holder, fuse (AEP model)
	⚠1-534-487-XX		Cord, power; parallel-blade plug (E model)
	1-534-492-00		Cord, antenna (E model)
	⚠1-534-817-XX	Ⓓ	Cord, power (AEP model)
♦	1-535-115-00	Ⓐ	Terminal, 2 p
♦	1-535-116-00	Ⓐ	Terminal, 3 p
♦	1-535-118-00	Ⓑ	Terminal, 5 p
♦	1-535-120-00	Ⓑ	Terminal, 7 p
	⚠1-551-530-00		Cord, power; euro-plug (E model)

Complete Circuit Boards

♦	A-4351-149-A		Tuner & Cassette (AEP model)
♦	A-4351-150-A		Tuner & Cassette (E model)
♦	A-4388-191-A		Tone & Power & Power Supply (E model)
♦	A-4388-192-A		Tone & Power & Power Supply (AEP model)

Printed Circuit Boards

♦	1-601-071-00	Ⓑ	Tuning Meter
♦	1-601-079-00	Ⓒ	LED Meter
♦	1-601-081-00	Ⓕ	Headphone
♦	1-601-083-00	Ⓑ	Stereo Indicator
♦	1-601-084-00	Ⓑ	Lamp
♦	1-601-085-00	Ⓑ	Tape Select

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

ACCESSORIES AND PACKING METERIALS

Part No.	*Description*
1-501-161-00	Ⓒ Antenna, feeder
1-534-492-00	Cord, antenna (E model)
1-551-278-00	Cord, speakers (E model)
3-701-630-00	Ⓐ Bag, polyethylene
3-770-895-11	Ⓓ Manual, instruction (AEP model)
3-770-895-51	Manual, instruction (E model)
3-794-615-51	Leaflet (E model)
4-856-926-00	Carton (E model)
4-858-078-00	Ⓑ Sheet, protection
4-858-084-00	Ⓑ Cushion, upper
4-858-085-00	Ⓑ Cushion (left), lower
4-858-086-00	Ⓑ Cushion (right), lower
4-859-912-00	Ⓐ Sheet, protection (for knobs)
4-859-924-00	Ⓔ Carton (AEP model)

1/4 WATT CARBON RESISTORS Ⓐ

Note: Circled letter Ⓐ is applicable to European models only.

Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

ELECTROLYTIC CAPACITORS

Note: Circled letter (Ⓐ to Ⓩ) are applicable to European models only.

→ : Use the high voltage rated one.

CAP. (μF)	RATING 6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.	50 VOLT. PART No.
0.47					→	1-121-726-00 Ⓐ
1.0					→	1-121-391-00 Ⓐ
2.2					→	1-121-450-00 Ⓐ
3.3	→	→	→	1-121-392-00 Ⓐ	→	1-121-393-00 Ⓐ
4.7	→	→	→	1-121-395-00 Ⓐ	→	1-121-396-00 Ⓐ
10	→	→	1-121-651-00 Ⓐ	1-121-398-00 Ⓐ	→	1-121-738-00 Ⓐ
22	→	→	1-121-479-00 Ⓐ	1-121-480-00 Ⓐ	1-121-662-00 Ⓐ	1-121-152-00 Ⓐ
33	→	→	1-121-403-00 Ⓐ	1-121-404-00 Ⓐ	1-121-652-00 Ⓑ	1-121-405-00 Ⓐ
47	→	1-121-352-00 Ⓐ	1-121-409-00 Ⓐ	1-121-410-00 Ⓐ	1-121-653-00 Ⓑ	1-121-411-00 Ⓐ
100	→	1-121-414-00 Ⓐ	1-121-415-00 Ⓐ	1-121-416-00 Ⓐ	1-121-357-00 Ⓑ	1-121-417-00 Ⓑ
220	1-121-419-00 Ⓑ	1-121-420-00 Ⓑ	1-121-421-00 Ⓐ	1-121-422-00 Ⓑ	1-121-261-00 Ⓒ	1-121-423-00 Ⓑ
330	1-121-751-00 Ⓑ	1-121-805-00 Ⓑ	1-121-521-00 Ⓒ	1-121-654-00 Ⓑ	1-121-655-00 Ⓓ	1-121-656-00 Ⓒ
470	1-121-424-00 Ⓑ	1-121-425-00 Ⓒ	1-121-426-00 Ⓒ	1-121-733-00 Ⓑ	1-121-361-00 Ⓔ	1-121-810-00 Ⓓ
1000	–	1-121-736-00 Ⓒ	1-121-245-00 Ⓓ	1-121-657-00 Ⓓ	1-121-388-00 Ⓔ	1-123-061-00 Ⓕ
2200	1-121-658-00 Ⓑ	1-121-659-00 Ⓒ	1-121-660-00 Ⓓ	1-123-067-00 Ⓕ	1-121-984-00 Ⓕ	–
3300	1-121-661-00 Ⓓ	1-123-075-00 Ⓔ	1-123-071-00 Ⓕ	–	–	–

CAP. (μF)	100 VOLT. PART No.	160 VOLT. PART No.	250 VOLT. PART No.	350 VOLT. PART No.
0.47	–	–	–	–
1.0	1-123-249-00 Ⓐ	1-123-252-00 Ⓐ	1-123-003-00 Ⓑ	1-121-168-00 Ⓑ
2.2	1-123-250-00 Ⓐ	1-123-026-00 Ⓑ	–	1-123-028-00 Ⓑ
3.3	1-121-995-00 Ⓐ	–	1-123-004-00 Ⓑ	1-123-006-00 Ⓒ
4.7	1-123-255-00 Ⓐ	1-121-246-00 Ⓑ	1-121-759-00 Ⓑ	1-123-007-00 Ⓓ
10	1-121-126-00 Ⓑ	1-121-999-00 Ⓑ	1-123-254-00 Ⓒ	1-123-008-00 Ⓓ
22	1-121-996-00 Ⓒ	1-123-253-00 Ⓒ	1-123-005-00 Ⓓ	1-123-022-00 Ⓓ
33	1-121-997-00 Ⓒ	1-121-757-00 Ⓒ	–	–
47	1-123-251-00 Ⓒ	1-121-919-00 Ⓒ	–	–
100	1-123-084-00 Ⓔ	–	–	–

CERAMIC CAPACITORS Ⓐ

CAP. (pF)	RATING 50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS Ⓐ

→ : Use the high voltage rated one.

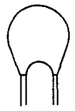
CAP. (μF)	RATING 25 VOLT. PART No.	50 VOLT. PART No.	CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS Ⓐ

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

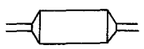
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
					→: Use the high voltage rated one.		
0.01					→	→	1-131-396-00 Ⓑ
0.015						→	1-131-397-00 Ⓑ
0.022						→	1-131-398-00 Ⓑ
0.033						→	1-131-399-00 Ⓑ
0.047						→	1-131-400-00 Ⓑ
0.068					→	→	1-131-401-00 Ⓑ
0.1					→	→	1-131-402-00 Ⓑ
0.15					→	→	1-131-403-00 Ⓑ
0.22					→	→	1-131-404-00 Ⓑ
0.33					→	1-131-409-00 Ⓑ	1-131-405-00 Ⓑ
0.47	–	–	–	–	1-131-412-00 Ⓑ	→	1-131-406-00 Ⓑ
0.68	–	–	–	1-131-415-00 Ⓑ	→	1-131-410-00 Ⓑ	1-131-407-00 Ⓑ
1.0	–	–	1-131-418-00 Ⓑ	–	1-131-413-00 Ⓑ	→	1-131-408-00 Ⓑ
1.5	–	1-131-421-00 Ⓑ	–	1-131-416-00 Ⓑ	→	1-131-411-00 Ⓑ	1-131-348-00 Ⓑ
2.2	1-131-424-00 Ⓑ	–	1-131-419-00 Ⓑ	–	1-131-414-00 Ⓑ	1-131-355-00 Ⓑ	1-131-349-00 Ⓑ
3.3	–	1-131-422-00 Ⓑ	–	1-131-417-00 Ⓑ	1-131-362-00 Ⓑ	1-131-356-00 Ⓑ	1-131-350-00 Ⓑ
4.7	1-131-425-00 Ⓑ	–	1-131-420-00 Ⓑ	1-131-369-00 Ⓑ	1-131-363-00 Ⓑ	1-131-357-00 Ⓑ	1-131-351-00 Ⓒ
6.8	–	1-131-423-00 Ⓑ	1-131-376-00 Ⓑ	1-131-370-00 Ⓑ	1-131-364-00 Ⓑ	1-131-358-00 Ⓒ	1-131-352-00 Ⓒ
10	1-131-426-00 Ⓑ	1-131-383-00 Ⓑ	1-131-377-00 Ⓑ	1-131-371-00 Ⓑ	1-131-365-00 Ⓒ	1-131-359-00 Ⓒ	1-131-353-00 Ⓓ
15	1-131-390-00 Ⓑ	1-131-384-00 Ⓑ	1-131-378-00 Ⓑ	1-131-372-00 Ⓑ	1-131-366-00 Ⓒ	1-131-360-00 Ⓓ	–
22	1-131-391-00 Ⓑ	1-131-385-00 Ⓑ	1-131-379-00 Ⓒ	1-131-373-00 Ⓒ	1-131-367-00 Ⓓ		
33	1-131-392-00 Ⓑ	1-131-386-00 Ⓒ	1-131-380-00 Ⓒ	1-131-374-00 Ⓓ			
47	1-131-393-00 Ⓒ	1-131-387-00 Ⓒ	1-131-381-00 Ⓓ	–			
68	1-131-394-00 Ⓑ	1-131-388-00 Ⓒ	–	–			
100	1-131-395-00 Ⓓ	–	–	–			

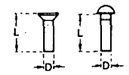
TANTALUM CAPACITORS



CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00 Ⓔ
0.047						1-131-274-00 Ⓔ
0.068						1-131-275-00 Ⓔ
0.1						1-131-276-00 Ⓓ
0.15						1-131-277-00 Ⓓ
0.22			–	–	1-131-262-00 Ⓓ	1-131-278-00 Ⓓ
0.33			–	–	1-131-263-00 Ⓓ	1-131-279-00 Ⓓ
0.47			1-131-169-00 Ⓓ	–	1-131-264-00 Ⓓ	1-131-280-00 Ⓓ
0.68			–	1-131-258-00 Ⓓ	1-131-265-00 Ⓓ	1-131-281-00 Ⓓ
1.0			1-131-254-00 Ⓓ	–	1-131-266-00 Ⓓ	1-131-282-00 Ⓓ
1.5		1-131-250-00 Ⓓ	–	–	1-131-267-00 Ⓓ	1-131-283-00 Ⓔ
2.2		–	–	1-131-259-00 Ⓓ	1-131-268-00 Ⓓ	1-131-284-00 Ⓔ
3.3		–	1-131-255-00 Ⓓ	–	1-131-269-00 Ⓓ	–
4.7		1-131-251-00 Ⓔ	1-131-171-00 Ⓓ	–	1-131-270-00 Ⓓ	–
6.8		–	–	1-131-260-00 Ⓓ	1-131-271-00 Ⓔ	–
10	–	–	1-131-256-00 Ⓓ	–	1-131-272-00 Ⓔ	–
15	–	1-131-252-00 Ⓓ	–	1-131-261-00 Ⓔ		
22	–	–	1-131-257-00 Ⓔ	–		
33	1-131-176-00 Ⓓ	1-131-253-00 Ⓔ	1-131-173-00 Ⓒ	–		
47	1-131-288-00 Ⓕ	1-131-174-00 Ⓓ	–	–		
100	1-131-177-00 Ⓓ					

HARDWARE NOMENCLATURE

Screw: – P 3 x 10
- L: Length in mm
- D: Diameter in mm
- Type of head
- Indicated slotted-head only. Unless otherwise indicated, it means cross-recessed head (Phillips type).



Nut, Washer, Retaining ring: N 3
- Diameter of usable screw or shaft
- Reference designation

Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

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